

**THE UNITED STATES NUCLEAR  
LEGACY IN THE MARSHALL  
ISLANDS: CONSIDERATION OF  
ISSUES RELATING TO THE  
CHANGED CIRCUMSTANCES  
PETITION**

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**OVERSIGHT HEARING**

BEFORE THE  
COMMITTEE ON RESOURCES  
JOINT WITH THE  
COMMITTEE ON INTERNATIONAL RELATIONS  
U.S. HOUSE OF REPRESENTATIVES  
ONE HUNDRED NINTH CONGRESS

FIRST SESSION

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May 25, 2005

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**JOINT OVERSIGHT HEARING ON "THE  
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**Wednesday, May 25, 2005**  
**U.S. House of Representatives**  
**Committee on Resources, joint with the**  
**Subcommittee on Asia and the Pacific of the**  
**Committee on International Relations**  
**Washington, D.C.**

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The Committees met jointly, pursuant to notice, at 2:00 p.m., in Room 1324, Longworth House Office Building, Hon. Richard W. Pombo [Chairman of the Committee on Resources] presiding.

Present from Committee on Resources: Representatives Pombo, Duncan, Gilchrest, Flake, Drake, Fortuno, Kildee, Faleomavaega, Abercrombie, Christensen, Tom Udall, Bordallo and Inslee.

Present from Subcommittee on Asia and the Pacific, Committee on International Relations: Representatives Leach, Rohrabacher, Faleomavaega and Watson.

**STATEMENT OF THE HON. RICHARD W. POMBO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA**

The CHAIRMAN. The Committee on Resources and House International Relations Committee are meeting today for an oversight hearing to hear testimony on issues relating to the United States nuclear legacy in the Republic of the Marshall Islands.

Under Rule 4(g) of the Committee Rules, any oral opening statements at hearings are limited to the Chairman and Ranking Minority Member of both committees. This will allow us to hear from our witnesses sooner and help Members keep to their schedules. Therefore, if other Members have statements, they can be included in the hearing record under unanimous consent.

First, on behalf of the full Committee, I would like to welcome Members from the Subcommittee on Asia and the Pacific who serve on the House International Relations Committee. Specifically, I would like to thank both Chairman Leach and Ranking Member Faleomavaega, who the Members of this committee also know well, for having an interest in holding a joint hearing. The work of these

two committees on issues that relate to the Republic of the Marshall Islands is both substantial and significant.

Most recently, the passage of the revised Compact of Free Association in the 108th Congress displayed a common bipartisan spirit on issues relating to the freely associated states. The Resources Committee alone has had over 30 hearings relating to the Compact of Free Association over the years, but never have we examined the specific issues that we will cover today. To that end, our witnesses today possess a strong background through their work in the Republic of the Marshall Islands (RMI) and those programs that affect Marshallese residents on a daily basis.

These Committees are meeting jointly today to examine the U.S. nuclear legacy in the RMI as it relates to revision within the original Compact of Free Association. This provision allowed the RMI to petition the Congress should they allege specific loss of persons or property that have been discovered since the passage of the original compact in 1986. In response to this petition, Congress was provided with a report received late last year that fully reviewed what is commonly called the Changed Circumstance Petition.

It is important to note that performing oversight on this issue is very complex, involving continued, complicated scientific debate, and I had the pleasure of meeting with Foreign Minister Zackios separately this week. Though I can appreciate the desire for taking a frank and thoughtful look at this issue of great importance to the RMI, interpretations of past actions and the application of existing science are many. Still, we must start down this path, and ask serious questions of past, present and future U.S. involvement. If we don't, we essentially refuse to confront an issue of primary importance that relates to the U.S. nuclear legacy in these islands.

We have been able to examine this issue in the months since the Administration submitted its review with the assistance of those who reviewed the petition, the continued input of the RMI Government, that of representatives of the outer atolls, as well as the active involvement of outside experts like the Congressional Research Service.

Today we have with us individuals from the RMI who have traveled a great distance to speak to the Changed Circumstances Petition and its role in the U.S. involvement in their islands. The hospitality they showed members of this committee, as well as Secretary Norton during the 108th Congress and our trip to the RMI will not be forgotten soon. In fact, even at the time we discussed this issue with local senators, and we welcome you all to Washington as well as the other witnesses who have spent an impressive amount of time reviewing the multi-layered subject of our hearing.

I thank the witnesses for coming and I look forward to hearing their testimony.

I want to recognize Mr. Faleomavaega for an opening statement. [The prepared statement of Chairman Pombo follows:]

**Statement of The Honorable Richard W. Pombo, Chairman,  
Committee on Resources**

Good afternoon.

First, on behalf of the full Committee, I would like to welcome Members from the subcommittee on Asia and the Pacific who serve on the House International Relations Committee. Specifically, I would like to thank both Chairman Leach and

Ranking Member Faleomavaega, who the Members of this Committee also know well, for having an interest in holding a joint hearing. The work of these two Committees in issues that relate to The Republic of the Marshall Islands is both substantial and significant. Most recently, the passage of the revised Compact of Free Association in the 108th Congress displayed a common bipartisan spirit on issues relating to the Freely Associated States.

The Resources Committee alone has had over 30 hearings relating to the Compact of Free Association over the years, but never have we examined the specific issues that we will cover today. To that end, our witnesses today possess a strong background through their work in the RMI and those programs that affect Marshallese residents on a daily basis.

These Committees are meeting jointly today to examine the U.S. nuclear legacy in the RMI as it relates to a provision within the original Compact of Free Association. This provision allowed the RMI to petition the Congress should they allege specific loss of persons or property that have been discovered since the passage of the original Compact in 1986. In response to this petition, Congress was provided with a report received late last year that fully reviewed what is commonly called the "Changed Circumstances Petition."

It is important to note that performing oversight on this issue is very complex, involving continued complicated scientific debate.

Having had the pleasure of meeting with Foreign Minister Zackios separately this week, though, I can appreciate the desire for taking a frank and thoughtful look at this issue of great importance to the RMI. Interpretations of past actions and the application of existing science are many. Still, we must start down this path to ask serious questions of past, present, and future U.S. involvement. If we don't, we essentially refuse to confront an issue of primary importance that relates to the U.S. nuclear legacy in these islands.

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Today we have with us individuals from the RMI, who have traveled a great distance to speak to the Changed Circumstances Petition and its role in U.S. involvement in their islands. The hospitality they showed Members on this Committee as well as Secretary Norton during the 108th Congress and our trip to the RMI will not be soon forgotten. In fact, even at that time we discussed this issue with local Senators. We welcome you all to Washington as well as the other witnesses who have spent an impressive amount of time reviewing the multi-layered subject of our hearing.

I thank the witnesses for coming and look forward to their testimony.

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**STATEMENT OF THE HON. ENI F.H. FALEOMAVAEGA, A  
DELEGATE IN CONGRESS FROM THE TERRITORY OF  
AMERICAN SAMOA**

Mr. FALEOMAVAEGA. Thank you, Mr. Chairman. I certainly want to thank you for calling this hearing this afternoon. Certainly I also want to thank our distinguished Member, Mr. Rahall, members of the full committee. I also would like to recognize also my colleague and dear friend, the Chairman of the House Subcommittee on International Relations on Asia and the Pacific, the gentleman from Iowa, Mr. Leach, and certainly thank Chairman Hyde and Chairman Lantos of the International Relations Committee for their support in calling this oversight hearing.

Mr. Chairman, for some time we have worked together to recognize the strength of our country's relationship with the Republic of the Marshall Islands, and to amend the Compact of Free Association to better provide for the needs of the people who continue to suffer the consequences of our nuclear testing program in the Pacific.

As the Ranking Member of the International Relations Subcommittee on Asia and the Pacific and as a Pacific islander, I feel

a special responsibility to the interests of our Pacific island communities, especially from the Marshall Islands, who have sacrificed greatly for our common good.

From 1946 to 1958, the United States detonated 67 nuclear weapons in the Marshall Islands, representing nearly 80 percent of all atmospheric tests ever conducted by the United States. If one were to calculate the net yield of these tests it would be equivalent to the detonation of 1.7 Hiroshima bombs every day for 12 years. These tests exposed the people of the Marshall Islands to severe health problems and genetic abnormalities for generations.

The effects of the U.S. nuclear testing program in the Marshall Islands, Mr. Chairman, I submit, continues to devastate the Marshall Islands, and the funds provided by the United States under the Compact of Free Association are grossly inadequate to provide for health care, environmental monitoring, personal injury claims or land and property damage.

Pursuant to the Compact and the accompanying Section 177 Agreement, the United States accepted responsibility for the damage to the property and environment of the Marshall Islands and the health of its people. This agreement did not constitute a final settlement of all claims as evidenced by the inclusion of Article IX authorizing the Government of the Marshall Islands to petition the U.S. Congress in the event of, and I quote, "changed circumstances that render the provisions of this agreement manifestly inadequate."

The Government of the Republic of the Marshall Islands has submitted a request to Congress based on a changed circumstances claim. The Administration, however, as represented by the State Department this morning and even in its report evaluating the Marshall Islands' request rejected the arguments made in the Marshall Islands' petition, contending that the claims did not constitute changed circumstances as defined in the agreement.

For the record, I want to make it clear, Mr. Chairman, that I take issue with the State Department's position. While the State Department denies that there is a legal basis for Congress to hear this petition, the fact remains that we are here today to decide this for ourselves.

Today we have an opportunity to live up to the responsibility we embraced over 50 years ago when we began nuclear testing in the Pacific. We should not be asking how we can sidestep this responsibility, but we should instead ask ourselves have we done everything we can possibly do to make things right for the people of the Marshall Islands who have sacrificed their lives, their health and their lands for the benefit of the United States.

I submit, Mr. Chairman, that regardless of whether this petition conforms to the State Department's conception of a proper legal basis for Congress's consideration, I do submit we have a strong, valid, humanitarian basis for hearing what the representatives of the Marshall Islands have to say to ensure that we fulfill our responsibilities to them.

I have reviewed the petition. I have researched this issue extensively, and I believe enough evidence exists to justify a thorough review of the changed circumstances in the petition.

I want to thank the representatives of the Republic of the Marshall Islands and the members of the State Department who are here today to testify, and I certainly welcome them and their testimony.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

I recognize the Chairman of the Subcommittee, Chairman Leach.

**STATEMENT OF THE HON. JAMES A. LEACH, A  
REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA**

Mr. LEACH. Thank you very much, Mr. Chairman, for co-hosting this hearing, and I have a full statement I will just ask unanimous consent to put in the record. But let me first say how honored I am to deal with this issue, and second, how honored the Congress is to have a distinguished gentleman from the Pacific to lend a perspective that I think is very important to this body.

Second, I would like to apologize, if I could, to our foreign minister, Mr. Zackios, who I had hoped to meet with earlier today and was unable to, and so I hope later, if that is possible, that we can meet.

In any regard, I appreciate the opportunity to be here and have a little bit more to say that will be in the record.

Thank you.

The CHAIRMAN. Without objection, the Chairman's full statement will be included in the record.

[The prepared statement of Chairman Leach follows:]

**Statement of The Honorable James A. Leach, Chairman, Subcommittee on  
Asia and the Pacific, Committee on International Relations**

On behalf of the Subcommittee on Asia and the Pacific, I would like to thank Chairman Pombo and Ranking Member Rahall for hosting today's joint hearing. We look forward to receiving testimony from the numerous experts and officials in attendance today, and I would like to extend a particular welcome to The Honorable Gerald Zackios, Foreign Minister of the Republic of the Marshall Islands.

The United States has shared a uniquely close and mutually beneficial relationship with our friends in the Marshall Islands for the past half-century. For almost forty years after World War Two, the U.S. administered the Marshall Islands as part of the United Nations Trust Territory of the Pacific Islands. Eventually, the Marshall Islands became a sovereign state and entered into a Compact of Free Association with the United States in 1986. The Compact was intended to ensure self-government for the Republic of the Marshall Islands, to assist in its economic development, and to advance certain national security objectives. During the last Congress, the Committee on Resources and the Committee on International Relations cooperated closely in the drafting and enactment of House Joint Resolution 63, major legislation amending and reaffirming the Compact of Free Association with the RMI, and securing billions of dollars of U.S. assistance over the next 20 years.

From 1946 to 1958, during the period of UN Trusteeship, the United States conducted 67 atmospheric nuclear weapons tests in the Marshall Islands atolls of Bikini and Enewetak. Whether or not those massive detonations were critical to the credibility and reliability of our nuclear deterrent during the Cold War, they represent the most vivid examples of a strategic partnership that stretches back to the Pacific Campaign of the Second World War. Regrettably, they also produced a detrimental health and environmental legacy that affected many Marshallese. Last year, on the 50th anniversary of "Castle Bravo," the largest of those tests, the House of Representatives took the opportunity (in H.Con.Res. 364) to recall the mutual sacrifice that our peoples have shared during the last half-century, and to commit ourselves to maintaining our special friendship in the decades ahead.

According to the Congressional Research Service, the United States has spent approximately \$530 million in the Marshall Islands on nuclear test-related compensation and assistance. In connection with the original Compact of Free Association, the United States and the RMI concluded a \$150 million agreement that constituted

"the full settlement of all claims, past, present and future—which are based upon, arise out of, or are in any way related to the Nuclear Testing Program." But the "Changed Circumstances" provision of that agreement also recognizes the right of the RMI to petition the Congress for additional, *ex gratia* compensation on the basis of subsequently discovered test-related damage that "could not reasonably have been identified" at the time of the agreement, and that renders the prior agreement "manifestly inadequate."

In September 2000, the Republic of the Marshall Islands filed a "Changed Circumstances Petition" with the Congress, seeking approximately \$3.3 billion in additional compensation. In November 2004, in response to a Congressional request, the U.S. Departments of State, Energy, and Defense issued an Administration report analyzing the Petition, which rejects the argument that the Petition's claims constitute "changed circumstances."

The RMI Changed Circumstances Petition is the subject of robust and complex scientific, methodological, and legal debate. It is my hope that today's hearing will—in a balanced and responsible way—help to unpack and clarify these issues for our Committees, and serve to maintain the deep friendship that exists between our two nations.

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The CHAIRMAN. I would like to introduce our first panel. I would like to welcome Mr. Howard Krawitz, Acting Deputy Assistant Secretary at the Department of State; Mr. Steven Cary, Deputy Assistant Secretary for Health at the Department of Energy; as well as Dr. Andre Bouville from the National Cancer Institute to our hearing today to talk about how the Administration views this topic.

Before they give their testimony, I wish to continue the customary practice of the Committee of swearing in all witnesses as provided under Rule 4(f). If I could have you stand and raise your right hand.

[Witnesses sworn.]

The CHAIRMAN. Thank you. You may be seated. Let the record show they all answered in the affirmative.

Welcome to the Committee. We are going to be with you, Mr. Krawitz. As you have been told before, the oral testimony is limited to 5 minutes. Your entire written testimony will be included in the record. So if you could just summarize your complete written testimony for me, I would appreciate it.

Mr. Krawitz.

**STATEMENT OF HOWARD M. KRAWITZ, ACTING DEPUTY ASSISTANT SECRETARY FOR EAST ASIAN AND PACIFIC AFFAIRS, U.S. DEPARTMENT OF STATE**

Mr. KRAWITZ. Chairman Pombo, Chairman Leach, distinguished Members, thank you for inviting me to discuss the Republic of the Marshall Islands, the RMI's Changed Circumstances Request and the Administration's evaluation prepared at Congress' request.

As the distinguished Member mentioned, between 1946 and 1958 the United States did carry out 67 nuclear tests on and near Bikini and Enewetak atolls in the northern Marshall Islands. We deeply regret the damage the nuclear tests caused, especially the 1954 "BRAVO" accident that affected 253 people downwind. The United States was and is concerned about the health and well-being of the RMI's people and environment.

As a result, beginning in the 1950s, the United States began programs to monitor and remediate the effects of these tests. We added programs in the 1960s, '70s and '80s. We continue to address these problems today. Since the 1950s we have spent more than

\$531 million for health and environmental remediation specifically related to nuclear testing-related problems in the RMI. That assistance is worth over \$837 million in '03 dollars. For many years the Energy Department has given superior health care to Marshall Islanders directly affected by the '40s and '50s tests, as well as to other populations not directly affected.

The Administration report to Congress details the hundreds of millions of dollars we have spent on remediation past and present. In '86 we signed the Compact of Free Association. The Section 177 Settlement Agreement, incorporated in the compact, made a full settlement of all claims, past, present and future resulting from the U.S. testing program. It gave the RMI \$150 million to set up a Nuclear Claims Fund and provided for an independent Nuclear Claims Tribunal to adjudicate all claims.

Article IX of the settlement, the Changed Circumstances Provision, allowed the RMI to ask Congress to consider additional compensation for injuries resulting from the test if it could show that its request met a set of defined injuries—defined criteria. And these are: the injury must be loss or damage to property and person of the citizens of the Marshall Islands; it must result from the nuclear testing program; the injury must arise or be discovered after the effective date of the agreement; the injury could not have been reasonably identified or known as of the effective of the agreement; and the injury must render the Settlement Agreement's provisions manifestly inadequate.

Article IX neither guarantees additional compensation nor commits the Congress to authorize or appropriate funds.

In 2000, the RMI, citing Article IX, asked Congress to consider compensation for claims of \$3 billion. In March 2002 the Congress asked the Administration to prepare an evaluation. The State Department convened a working group. U.S. Government departments and technical agencies carefully and methodically reviewed the RMI request, as well as existing scientific studies of nuclear testing's impact on the Marshall Islands.

In January of this year, the State Department gave the Congress the Administration's evaluation that the RMI submission does not meet the criteria of Changed Circumstances as defined in Article IX, and that there is no legal basis under the settlement for considering additional payments. A copy of the Administration report has been submitted for the record.

Let me quickly look at some of the areas that the RMI has claimed. The RMI asserts the radioactive fallout significantly affected an area well beyond the northern atolls and islands. Most scientific evidence shows the elevated radiation levels are limited to the most northerly areas, and even more, that many historically inhabited areas can be resettled under specific conditions.

At the time of the settlement, the RMI acknowledged that some islands would be less habitable than others and that some would have limited use, and the Government of the RMI assumed responsibility for controlling those areas affected by nuclear tests.

The RMI seeks comprehensive primary, secondary and tertiary health care for all people of the Marshall Islands for 50 years. The argument seeks to tie, without substantiation, current public health and medical problems in the RMI to the testing. For the

populations on the atolls where testing occurred the United States has for years provided extensive medical treatment. The settlement agreement set up the Nuclear Claims Fund, made \$2 million a year available for 15 years to the people of the four atolls. The estimated population of Bikini, Enewetak, Rongelap and Utrik atolls in '54 was 500 people. Today that program serves 13,460 people, one-quarter of the national population. The program was to expire in '01. The Congress extended it until '06.

In 1954, additionally, the Congress mandated a special medical program for the folks exposed to the "BRAVO" test radiation. The Energy Department runs this program. Neither the settlement agreement nor the compact envisioned providing comprehensive health care for all people in the RMI indefinitely. Article IX offers no basis for such a program.

For the other categories, I'll just briefly touch. The Nuclear Claims Fund, the mixed earnings record, the tribunals making awards in excess of the funds it had available, these do not constitute changed circumstances under the Article IX. The United States had no role in the tribunal, either in setting it up, making awards or decision.

Programs that the RMI is requesting today were considered and rejected in 1986. They do not constitute changed circumstances.

I would just like to end with the important point, the Administration evaluated the specific question of whether the RMI submission qualified as changed circumstances under the Article IX of 177 Agreement. We found that they do not. The evaluation does not describe the overall U.S.-RMI relationship, our shared history, our unique friendship, nor does it talk about the overall relationship. Nuclear relations are but one aspect of our relationship.

The amended compact makes health care a focus for assistance grants. We and the RMI plan to spend nearly \$16 million in compact funds in '05. We project similar amounts for the next several years. The RMI received hundreds of millions of compact dollars over the first 18 years of the association. We are committed to spend over 1.2 billion in direct assistance and trust fund contributions over the next 20 years. We have set up a trust fund to give the RMI a source of income after the compact assistance ends. The RMI is eligible for many HHS public health grants and services, just as U.S. States are.

Last, I would just like to say we recognize this is a serious continuing public health challenge in the RMI. We are committed to working with the RMI to meet those challenges. They are our global partner. They are a valued friend. We remain committed and we look forward to working together on a host of issues of mutual concern to us.

Thank you.

[The prepared statement of Mr. Krawitz follows:]

**Statement of Howard M. Krawitz, Acting Deputy Assistant Secretary for  
East Asian and Pacific Affairs, U.S. Department of State**

Chairman Pombo, Chairman Leach, distinguished Members, thank you very much for the chance to speak with you today about the important topic of the Government of the Republic of the Marshall Islands' Changed Circumstances Request and the Administration's report prepared at the request of the Congress.

I will start with a brief historical overview. The United States carried out sixty-seven underwater, surface and atmospheric nuclear tests on and near the Bikini and Enewetak atolls in the northern Marshall Islands between 1946 and 1958, while they were part of the Trust Territory of the Pacific Islands. The United States still deeply regrets the 1954 "Bravo" accident that harmed 253 downwind islanders. We remain concerned about the damage done to the people and environment of the Marshall Islands caused by the nuclear tests in the 1940's and 1950's.

The U.S. Government established programs for the people of the Marshall Islands to monitor and remediate the effects of those tests beginning in the 1950's, with additional programs created in the 1960's, 1970's and 1980's. We remain engaged in addressing these problems. The United States has spent more than \$531 million for health and environmental remediation specifically related to the nuclear testing program since the 1950's. That assistance is worth over \$837 million in 2003 dollars. Our colleagues in the Department of Energy continue to provide a superior level of health care service for those people directly affected by the nuclear tests, and have in fact provided health care to other populations as well for many years. The Administration's report in January outlines in great detail in an appendix the hundreds of millions of dollars the United States has spent in past and present U.S. remediation efforts.

In the 1980's, the United States and the Marshall Islands negotiated the Compact of Free Association, which went into effect on October 21, 1986 (PL 99-239 Stat. 1770). The Compact included a "full settlement of all claims, past, present and future" resulting from the U.S. nuclear testing program. This Section 177 Settlement Agreement provided \$150 million to the Marshall Islands to establish a Nuclear Claims Fund and an independent Nuclear Claims Tribunal to adjudicate all claims.

Article IX of the Section 177 Settlement Agreement, entitled "Changed Circumstances," is the only provision for the Government of the Republic of the Marshall Islands (RMI) to request the United States Congress to consider additional compensation for injuries resulting from the nuclear tests. In order to be the subject of such a request to Congress under Article IX, an injury:

- (1) must be loss or damage to property and person of the citizens of the Marshall Islands;
- (2) must result from the Nuclear Testing Program;
- (3) must arise or be discovered after the effective date of the Agreement (October 21, 1986);
- (4) must be injuries that were not and could not reasonably have been identified as of the effective date of the Agreement; and
- (5) such injuries must render the provisions of the Section 177 Settlement Agreement manifestly inadequate.

In Article IX, the Governments of the Marshall Islands and the United States also noted: "It is understood that this Article does not commit the Congress of the United States to authorize and appropriate funds."

In 2000, citing Article IX of the Section 177 Settlement Agreement, the Government of the Republic of the Marshall Islands submitted to the President of the Senate and the Speaker of the House of Representatives a request that certain claims totaling over \$3 billion be considered by the Congress for compensation. In March 2002, the Senate Energy and Natural Resources Committee and the House Resources Committee formally asked the Administration to evaluate the RMI's request. Over the following months, the State Department convened a working group of U.S. Government departments and technical agencies that carefully and methodically reviewed the request and the existing scientific studies of the impact of nuclear testing in the Marshall Islands.

On January 4, 2005, the State Department submitted the Administration's evaluation to Chairman Domenici, Senator Bingaman, Chairman Pombo and Congressman Rahall. The RMI's submission to Congress did not meet the criteria of "changed circumstances" as required by Article IX of the Section 177 Settlement Agreement, and there is therefore no legal basis under the Settlement Agreement for considering additional payments. I am submitting a copy of the complete Administration report as an attachment to this testimony for the record.

Let me briefly address the major areas in which the RMI argues "changed circumstances." First, the RMI asserts that exposure to radioactive fallout significantly affected an area well beyond the northern atolls and islands. The vast majority of scientific evidence, however, documents that the elevated levels of radiation are limited to the most northerly atolls and islands, and that even many historically inhabited northern islands can be resettled under specific conditions. At the time of the Section 177 Settlement Agreement, the Marshall Islands acknowledged that, within the northern atolls, some islands would be less habitable than others and some would only have limited use. The Government of the Marshall Islands took the

responsibility to control the use of areas in the Marshall Islands affected by nuclear tests.

Second, the RMI seeks comprehensive primary, secondary and tertiary health care systems to serve all the people of the Marshall Islands for fifty years. This argument draws an unsubstantiated link between current public health and medical problems in the Marshall Islands and the U.S. nuclear testing program. In fact, the United States has provided extensive medical care to the populations living on the atolls where testing occurred. The Section 177 Settlement Agreement provided \$2 million per year for 15 years from the Nuclear Claims Fund to provide medical care to the people of Bikini, Enewetak, Rongelap and Utrik atolls. The estimated population of the four atolls in 1954 was approximately 500 people. That program currently serves 13,460 people, fully one-quarter of the national population. The Section 177 Settlement program was due to terminate in 2001. Congress has extended it until 2005.

In addition, starting in 1954, Congress mandated a special medical program for the members of the population of Rongelap and Utrik who were exposed to radiation resulting from the 1954 "Bravo" test (253 people). This program is run by the Department of Energy. Neither the Section 177 Settlement Agreement nor the larger Compact envisioned the United States providing comprehensive health care for all the people of the Marshall Islands indefinitely, and there is no basis under Article IX to request such a program.

Regarding three other categories—personal injury, loss of land use and hardship, and atoll rehabilitation—the RMI claims as "changed circumstances" the fact that the Nuclear Claims Fund has had a mixed earnings record and that the Nuclear Claims Tribunal, set up and run by the Marshall Islands, has chosen to award more funds than generated by the Nuclear Claims Fund. The Tribunal's decisions to set award amounts well above the amount of funds available in the Nuclear Claims Fund do not constitute "changed circumstances" under Article IX of the Section 177 Settlement Agreement.

The final broad category of RMI claims includes occupational safety, nuclear stewardship and education. The Governments of the Marshall Islands and the United States decided not to include those types of programs in the Section 177 Settlement Agreement. The lack of those programs and the desire to have such programs are not "changed circumstances" as defined in the Settlement Agreement.

I would like to close by underscoring an important point. The Administration's report evaluated the specific question of whether the Government of the Republic of the Marshall Islands' submission qualified as "changed circumstances" under Article IX of the Section 177 Settlement Agreement. The Administration's report does not describe the overall relationship between the United States and the Republic of the Marshall Islands. Shared history and common values make our friendship with the Marshall Islands one of the strongest in the world.

The history of the nuclear testing program and the settlement of claims arising from that program are but one facet of the unique and longstanding friendship our two nations enjoy, a relationship of mutual understanding and shared values that remains strong today. The Compact of Free Association of 1986 and the amendments that went into effect just last year link our two nations together for the foreseeable future and guarantee direct U.S. assistance to the RMI for twenty years. Under the amended Compact, our two nations have established a trust fund to provide an ongoing source of income for the RMI after Compact assistance ends to be used for the same purposes as current assistance. The amended Compact highlights health care as one of the two primary focus areas out of six sectors for assistance grants. For 2005, the Republic of the Marshall Islands and the United States have agreed to spend nearly \$16 million on health care using Compact funds, and we project similar amounts for each of the next several years. Hundreds of millions of dollars in Compact funds flowed to the RMI during the first eighteen years of free association (1986-2004), and over the next twenty years under the amended Compact, the United States is committed to spend over \$1.2 billion in direct assistance and trust fund contributions. The RMI also remains eligible for a number of categorical and competitive public health grant programs administered by the U.S. Department of Health and Human Services in the same way as U.S. states and territories.

The Administration recognizes serious and continuing public health and medical challenges in the Marshall Islands and supports the Government's efforts to meet those challenges. The Republic of the Marshall Islands is a global partner and a valued friend, and the United States will, through the Compact and other means, remain engaged and committed to building a better future for the people of the Marshall Islands. We look forward to continuing to work together on a host of issues of mutual concern to both our nations.

Thank you very much for this opportunity.

**Response to questions submitted for the record by Acting Deputy Assistant Secretary Howard M. Krawitz**

**Questions submitted by Chairman Richard Pombo**

**Question 1: Can you explain to the Committees, in general, why negotiations regarding the request for compensation under Section 177 of the original Compact were not reflected in the new Compact language the Administration submitted to Congress in 2003?**

*Answer:*

The Section 177 Settlement Agreement fully settled all claims against the United States arising out of the Nuclear Testing Program conducted in the Marshall Islands between 1946 and 1958. Article IX of that agreement does not provide for or contemplate further negotiations, it simply spells out the particular circumstances under which the Government of the Republic of the Marshall Islands (GRMI) may request the U.S. Congress to consider providing additional compensation with no obligation on Congress to do so. The GRMI submitted a request to Congress citing Article IX. Congress asked the Administration to evaluate the GRMI request. The Administration provided its evaluation of the request to Congress on January 3, 2005.

The amendments to the Compact of Free Association were a separate matter negotiated by the Administration under the leadership of the President's Personal Representative for Compact Negotiations. Negotiation of the amendments to the Compact was prompted by section 231 of the original Compact which called for negotiations regarding the expiring provisions of the Compact. At the same time, the negotiators amended other provisions to reflect lessons learned over the 17 years of Compact implementation.

The Section 177 Settlement Agreement was a full settlement of the nuclear claims. The GRMI request to Congress under Article IX of that settlement agreement was properly outside the purview of the Administration's Compact amendment negotiations.

**Question 2: Your testimony points to the fact that over 13,000 people receive care for their health needs under the Section 177 Settlement Program. Does this properly target only the intended beneficiaries of this program, which continues to be funded by Congress?**

*Answer:*

The Section 177 Settlement Agreement provided two million dollars per year for 15 years from the Nuclear Claims Fund to provide health care services to the people of Bikini, Enewetak, Rongelap and Utrik atolls affected by the consequences of the U.S. Nuclear Testing Program and their descendants. Direct U.S. funding of the "177 medical program" ended in 2003, however, through subsequent Congressional action, some similar services are funded by a grant from the Department of the Interior through September 30, 2005. To be clear, certain peoples of Rongelap and Utrik atolls already included in the separate Department of Energy's special medical program, receive only supplemental care from the "177 health care program." Each of the four atolls determined the eligibility of its people to participate, and, in addition, the RMI's national legislature mandated that any person receiving a compensation award from the Nuclear Claims Tribunal be included. The State Department does not have definitive information on the nearly 15,000 Marshallese enrolled in the "177 medical program," however we understand that at least some of the participants almost certainly have no connection to the Nuclear Testing Program and its effects on Bikini, Enewetak, Rongelap or Utrik atolls.

**Question 3: Is it the position of the Administration that any responsibility we had to the RMI with relation to any needs was relinquished by the \$150 million Section 177 Settlement? Are there any continuing needs that can legally be addressed outside of what we are calling "changed circumstances?"**

*Answer:*

By legally binding agreement between them the United States and the Marshall Islands agreed that the Section 177 Settlement Agreement constitutes the "full settlement of all claims, past, present and future, of the Government, citizens and nationals of the Marshall Islands which are based upon, arise out of, or are in any way related to the Nuclear Testing Program, and which are against the United States, its agents, employees, contractors and citizens and nationals, and of all claims for equitable or any other relief in connection with such claims". A corner-

stone of that settlement was the U.S. provision of \$150 million to the Marshall Islands to establish a Nuclear Claims Fund. As indicated by its terms, the Section 177 Settlement Agreement fully settled the nuclear claims. The only opening for a request for additional compensation was provided by Article IX of the agreement and it provided only that, if the specified conditions were met, the Marshall Islands could submit a request to Congress for its consideration but the provision also explicitly stated that there is no obligation on Congress to authorize and appropriate funds. Article IX merely provides the opportunity to make the request. The United States continues to focus a large part of its assistance efforts and dollars under the Compact of Free Association towards supporting the RMI's nationwide health care system. We believe that the web of existing medical and environmental programs, including those provided under the Compact, is addressing and will continue to address RMI needs with respect to the legacy of our nuclear testing program.

**Questions submitted by Congressman Steve Pearce**

**Question 1: The Republic of the Marshall Islands is asking for \$3.3 billion in compensation for nuclear testing. What is the amount of compensation paid by the United States for compensation to uranium mill-workers, nuclear test site workers, and downwinders?**

*Answer:*

The State Department has no authorities with respect to compensation paid by the United States to uranium mill workers, nuclear test site workers, and downwinders and therefore is not in a position to provide the information requested regarding compensation paid to these groups.

**Question 2: The compensation for the Republic of the Marshall Islands is available for personal injury damages without proof of specific proof of causation. Why are we giving compensation to people without a specific cause, when we deny U.S. citizens the same compensation?**

*Answer:*

The claims arising out of the U.S. nuclear testing program in the Marshall Islands were legally settled as part of the Compact of Free Association between the United States and the Marshall Islands enacted into U.S. law in 1986 (P.L.99-239). The settlement agreement provided for the establishment of an independent tribunal to adjudicate claims. The United States has no control over the working of the Tribunal, including the level of proof the tribunal requires. Specifically, Article IV of the Section 177 Settlement Agreement provided that the Government of the Marshall Islands would establish a claims Tribunal in accordance with its constitutional processes and the Settlement Agreement. The Claims Tribunal is to have jurisdiction to render final determination upon all claims relating to the Nuclear Testing Program. In exercising its jurisdiction, the Claims Tribunal is to be independent of the legislative and executive powers of the Government of the Marshall Islands. In making awards, the Claims Tribunal is to take into account the validity of the claim, any prior compensation made as a result of such claim and such other factors as it may deem appropriate. In determining any legal issue, the Claims Tribunal may have reference to the laws of the Marshall Islands, including traditional law, international law and, in the absence of domestic or international law, to the laws of the United States. Within this framework, the Tribunal decides the basis on which it will distribute compensation. The settlement agreement reflects an agreement between the United States and the Marshall Islands, enacted into law, that the United States would not be involved in the Tribunal's adjudication or awards processes. The Tribunal publishes a detailed annual report of its work.

The State Department has no authorities with respect to the handling of domestic U.S. nuclear compensation cases and therefore has no authority to take a position on the basis on which U.S. citizens are compensated for personal injury damages without specific proof of causation.

**Question 3: Is radiation poisoning not on the list of compensable illnesses? If not, why not?**

*Answer:*

It is our understanding that the independent Nuclear Claims Tribunal has chosen to award compensation for 36 medical conditions, including radiation sickness diagnosed between 1946 and 1958. As explained in answer to the previous question, under the Section 177 Settlement Agreement as enacted by the U.S. Congress, the United States has no control over the decisions of the independent Nuclear Claims Tribunal established by the Government of the Marshall Islands regarding the medical conditions for which it will compensate.

**Question 4: Wilburn Dunlap in my district just passed away (workflow #120464.) The Department of Justice said he didn't have a compensable illness and would not compensate him, even though he was one of the first workers at the Trinity Test Site, now White Sands Missile range, and was the first person to enter the Trinity Test Site crater on September 17, 1945 after a nuclear detonation. He was diagnosed with a cell mutation as a result of radiation poisoning. He had more than 550 gamma globulin shots and about 27 surgeries to stay alive, yet the U.S. Government unjustly would not compensate him for his illness. My office has been in contact with the Department of Energy, Department of Justice and Labor Department. Why do these agencies refuse to compensate either Wilbur, and now his family, even though there is ample evidence to show his illness was caused by working at the Trinity Test Site?**

*Answer:*

The State Department has no authorities with respect to the handling of domestic U.S. nuclear compensation cases and cannot speak for the Departments of Energy, Justice or Labor regarding the handling of those cases.

The CHAIRMAN. Thank you.  
Mr. Cary.

**STATEMENT OF STEVEN V. CARY, DEPUTY ASSISTANT  
SECRETARY FOR HEALTH, U.S. DEPARTMENT OF ENERGY**

Mr. CARY. Mr. Chairman and members of the committees, I am pleased to be here today to discuss the two Marshall Islands' programs administered by the Department of Energy, environmental monitoring and special medical care.

These programs were created by Congress to help citizens of the Marshall Islands deal with the consequences of the U.S. nuclear weapons testing. In the interest of time, I will submit my full statement for the record.

The goal of the environmental program, conducted by scientists at Lawrence Livermore National Laboratory, has been to characterize the radioactive contamination in the Marshall Islands, specifically, Bikini, Enewetak, Rongelap and Utrik atolls.

Data support a number of recommendations for the possible resettlement of these atolls and islands as summarized in my prepared statement. We believe that the Livermore work has provided a firm foundation from which the Marshall Islands Government and their people can make informed decisions about resettlement and land use.

In addition to the environmental monitoring program, the Department of Energy manages a special medical care program. The program's primary objective is to provide annual medical screening examinations and cancer treatment to the 253 individuals who were in Rongelap and Utrik atolls and were exposed to fallout.

DOE has worked closely with the Republic of the Marshall Islands to carry out successful and responsive environmental and medical care programs in accordance with congressional intent. Both programs are funded for a total of \$6 million in the Administration's Fiscal Year '06 budget request.

Mr. Chairman, I thank you for this opportunity, and I would be pleased to answer any questions.

[The prepared statement of Mr. Cary follows:]

**Statement of Steven V. Cary, Deputy Assistant Secretary for Health, U.S.  
Department of Energy**

Mr. Chairman and Members of the Committees:

I am pleased to be here to discuss the Marshall Islands environmental monitoring and special medical care programs administered by the Department of Energy (DOE). As you know, these programs were created in response to Congressional direction to help the citizens of the Republic of the Marshall Islands (RMI) with the environmental and medical consequences of the U.S. atmospheric nuclear weapons testing program.

The atmospheric nuclear weapons test, code-named Castle BRAVO, was conducted at Bikini atoll in 1954. This test inadvertently deposited radioactive fallout on 253 residents of Rongelap and Utro. U.S. Navy physicians cared for these individuals in the days immediately following the test and continued this care when they moved to Brookhaven National Laboratory in 1956. Under the Compact of Free Association Amendments Act of 2003 (Public Law 108-188), DOE will continue to provide medical care in the years ahead. Additionally, Public Laws 95-134 and 96-205 require DOE to conduct environmental monitoring to characterize the radioactivity remaining at the four atolls of Bikini, Enewetak, Rongelap, and Utro. These monitoring programs began in 1972-73 at Enewetak atoll and continue today.

**DOE Marshall Islands Environmental Monitoring Program**

For the past 33 years, the environmental monitoring program has been conducted for DOE by scientists from Lawrence Livermore National Laboratory (LLNL). The program has sponsored detailed environmental monitoring and agricultural research studies to characterize current radiological conditions at the Bikini, Enewetak, Rongelap, and Utro atolls. Through 2004, the U.S. Government has expended more than \$69 million in this effort.

From 1974 until the 1990s, the goal of the environmental program was to characterize the extent and distribution of radioactive fallout contamination in the Marshall Islands. This work has become the standard by which dose assessment and radioecology programs are measured today. The environmental monitoring process conducted by LLNL consists of extensive field sample collection and laboratory analysis of vegetation, marine organisms, soil and sediment, terrestrial animal samples, water samples, and aerosol samples. To date, more than 70,000 environmental samples have been collected and analyzed, providing essential knowledge and understanding about the unique behavior of fallout radionuclides in coral atoll ecosystems and associated pathways for human exposure.

The current mission of the environmental program is to provide high quality scientific data and understanding of radiological conditions in the Marshall Islands. This same information is important in assessing changes in radiological conditions in association with atoll development or land-use, and in providing fundamental scientific data in support of local remediation programs.

**Key Accomplishments**

Through the work at LLNL, we now have an accurate characterization and understanding of the nature and extent of radiation contamination in the northern belt atolls of Bikini, Enewetak, Rongelap, and Utro. In addition, DOE has worked closely with local atoll governments to develop a network of whole body counting facilities and other state-of-the-art individual monitoring programs to accurately assess individual doses to island residents.

Whole body counting facilities have operated on Rongelap Island, Enewetak Island, and Majuro since 1999. These facilities, operated year round by trained Marshallese technicians under the careful guidance of our Livermore scientists, allow us to assess potential health risks from actual data rather than relying on assumptions derived from various dietary scenarios. In combination with environmental monitoring data, residents who receive a whole body count showing the presence of radioactive cesium can make informed decisions about their eating habits or life-style. Although the work is still in progress in several areas, scientific data are now available that, along with agricultural research studies conducted on Bikini Island, support a number of recommendations for the possible cleanup and rehabilitation of islands. I emphasize that these conclusions are based solely on the scientific data and do not take into account other factors that will ultimately play a role in decisions of the Marshallese people, such as cleanup criteria and resettlement.

- The Utro people can choose to live on their atoll without concern that their health will be adversely affected by exposure to residual fallout contamination. DOE has provided a whole body counter and locally trained technicians to provide a way for people to have confidence that living on Utro Island and

consuming local foods is not detrimental to their health. LLNL plans to conduct bioassay monitoring for Utrok islanders to provide an updated assessment of plutonium exposure in this community based on newly developed, state-of-the-art measurement technologies. It is expected that these data will provide additional information to the community regarding whether residual plutonium in the environment is a significant long-term health hazard.

- The Rongelap people are engaged in an active resettlement program and have adopted cleanup methods developed by Livermore scientists. The cleanup method being employed includes (1) Replacing surface soils removed from village and housing areas with a layer of crushed coral, and (2) Adding potassium fertilizer to areas where food is growing. This mitigation technique, referred to as the "combined option," is the basis for the resettlement program being implemented at Rongelap today. We continue to provide radiological monitoring for the ongoing resettlement activities, including plutonium urinalysis for workers involved in transforming the island into a safe habitat. To date, none of the construction workers and agricultural laborers, who have the most intense exposure to soil and dust, have demonstrated levels above that expected from exposure to worldwide fallout contamination.
- The Bikini people could choose to resettle if they, like the Rongelap, employ the combined option described above. The International Atomic Energy Agency (IAEA), at the request of the Bikini people, studied the issues and affirmed that the combined option would be appropriate for the situation on Bikini. Should Bikini choose to resettle, DOE would provide appropriate medical and environmental monitoring services.
- The Enewetak people have been resettled on Enewetak Island since 1980. Plutonium bioassay and whole body counting results have confirmed that radiation doses on Enewetak Island are below levels expected from exposure to worldwide fallout contamination and present no health consequences to the population. If the Enewetak people decide to resettle Enjebi Island, DOE has recommended using the combined option, as used on Rongelap Island and proposed for Bikini Island, for mitigation.

The scientific studies resulting from the LLNL environmental program have undergone eight extensive independent scientific peer reviews from groups of nationally and internationally respected scientists. Two of these reviews were from the National Academy of Sciences. Six independent scientific groups confirmed the methods and associated dose calculations used by LLNL.

We believe that the LLNL work has provided timely, relevant, and credible environmental data. The environmental data, together with the independent environmental reviews made possible by trust funds provided through the Department of Interior, have provided a firm foundation from which the RMI government and their people can make informed decisions about resettlement and land use.

As DOE completes the bulk of the environmental sampling and agricultural studies over the next few years, we will continue to consult with the RMI and the local atoll governments. We will continue our record of being responsive to their questions, concerns, and needs and hope to continue our part in answering scientific questions about radiological contamination in the Marshall Islands environment.

#### **The DOE Marshall Islands Special Medical Care Program**

In addition to the environmental monitoring program, the Department manages a Special Medical Care Program in response to Congressional direction. The program's primary objective is to provide annual medical screening examinations and cancer treatment to the 253 individuals who were in Rongelap and Utrok and exposed to fallout from Castle BRAVO. Today, 194 individuals remain in the program for medical screening and treatment.

Until June 1998, medical care was provided to the Rongelap and Utrok beneficiaries of the program by a team of United States doctors led by Brookhaven National Laboratory who would visit the Marshall Islands twice a year for medical missions lasting four to six weeks. From June 1998 through July 2005, the Special Medical Care Program was administered by a Honolulu-based research foundation with examinations conducted year-round in various clinics in the Marshall Islands.

In 2003, DOE, the RMI government, and the local governments of the Rongelap and Utrok atolls began a process to make the medical care program more responsive to the needs of the beneficiaries and be sustainable over the remainder of the lifetimes of the beneficiaries. This led to a revised program scheduled to begin in July 2005, the goals of which are: preventative and curative healthcare for the mandated population to improve their health status; delivery of healthcare near patients' homes; community involvement; delivery of healthcare in a culturally appropriate

manner; and coordination with other health agencies in the RMI to improve overall service.

DOE clinics are currently located on Kwajalein Island and in Majuro. Local Marshallese physicians and nurse supervisory personnel see patients daily. Patients living in Hawaii and in the continental U.S. are serviced by a recognized nationwide health care management organization. We feel that the DOE Special Medical Care Program will strengthen our ability to carry out the core congressional mandate without escalating the cost of the program.

DOE has committed itself to be responsive to the questions, concerns, and needs of the Marshall Islands people. DOE has worked toward this goal by actively listening to the central and local governments and their communities and giving them a voice in determining the future direction of the Marshall Islands program. Since 1990, DOE has engaged the local leadership and community members from Bikini, Enewetak, Rongelap, and Utrok in more than 40 community meetings to discuss the results of scientific reports as they were completed. In addition, DOE hosts an annual meeting with the RMI central government and representatives from Bikini, Enewetak, Rongelap, and Utrok to discuss program strengths and weaknesses. Regular RMI/DOE working group meetings are also held, the most recent being February 2005.

Since 1999, LLNL has published 11 scientifically peer-reviewed reports providing scientific information and conclusions on the radiological and chemical environment for the Bikini, Enewetak, Rongelap, and Utrok atolls. For example, RMI scientists had concerns about the health impacts of materials used in the nuclear devices such as thallium, a known neurotoxin. LLNL was able to review classified documents and prepare a report on the quantities of specific materials released and their potential public health impact. In addition, LLNL has published numerous technical documents intended for use by atoll officials and scientists supporting the U.S. and RMI governments.

### **Conclusions**

DOE has worked closely with RMI to carry out successful and responsive Marshall Islands environmental and medical care programs in accordance with congressional intent and while achieving program efficiency and effectiveness. Both programs are funded at \$6.0 million in the Administration's FY 2006 budget request.

We believe that LLNL's environmental work provides a firm foundation on which the RMI government and their people can make informed decisions about resettlement and land use. As DOE completes the bulk of the environmental sampling and agricultural studies over the next few years, we will continue to consult with the RMI and the local atoll governments. We will continue to maintain a presence in the Marshall Islands as long as we can contribute to addressing scientific questions about radiological contamination on Bikini, Enewetak, Rongelap, and Utrok atolls.

Similarly, DOE's Special Medical Care Program will continue to provide sound basic preventative and curative healthcare for the selected population within communities where they live, using additional support from the U.S. Army command on Kwajalein Island and its hospital to improve overall delivery of medical services.

Mr. Chairman, I thank you for this opportunity to share the current status and progress of our programs in the Marshall Islands. I would be pleased to answer any questions.

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### **Response to questions submitted for the record by Steven V. Cary, Deputy Assistant Secretary for Health, U.S. Department of Energy**

#### **QUESTION FROM CHAIRMAN POMBO**

##### *Cleanup Guidelines*

**Question 1. It is argued in the RMI Petition that the U.S. Government now uses stricter standards as they apply to radiological remediation. Can you describe how standards are applied domestically to various sites such as brownfields and how these standards translate to those used to evaluate cleanup sufficiency in the RMI?**

**Answer 1.** Cleanup guidelines are unique to each remediation situation. As discussed in the Department of State "Report Evaluating the Request of the Government of the Republic of the Marshall Islands Presented to the Congress of the United States of America" and in the Congressional Research Service Report "Republic of the Marshall Islands Changed Circumstances Petition to Congress," the U.S.'s domestic approaches to cleanup would not translate directly into actions that would be appropriate for Marshall Islands atolls. This is because the allowable concentration would depend on the potential pathway of human exposure resulting

from the intended land use. For example, the extent of cleanup necessary to attain a standard at DOE sites at Hanford and Rocky Flats would be different than in the Marshall Islands because the land uses at the DOE sites will be significantly different in terms of public access.

The cleanup standard for the Marshall Islands, based on an Environmental Protection Agency guideline, was selected by the Nuclear Claims Tribunal in 1998. The Claims Tribunal decision was unilateral and did not include consultation with the U.S. government.

It is important to note that DOE provides long-term whole body counting to determine if actual internal levels of radiation from eating locally grown foods remain below the standard adopted by the Marshallese themselves. Marshallese living on atolls that have been resettled have all shown exposure levels well below the standard selected by the Nuclear Claims Tribunal.

*Environmental Monitoring Programs*

**Question 2. Given the extensive environmental monitoring programs, it would appear that conditions in even the most directly affected 4 atolls are shown to be safe for habitation. Your testimony seems to assert that citizens growing up in the RMI should no longer see the direct effects of the U.S. nuclear tests. Is this accurate?**

**Answer 2.** Yes. Citizens growing up in the Marshall Islands today are exposed to radiation levels far below those on Bikini and Rongelap Atolls just after U.S. nuclear testing concluded in 1958. This is due to the natural decay of cesium-137, the predominant radioactive fallout material, coupled with its accelerated removal by environmental transport processes. The impact of radioactive iodine on the thyroid gland was limited to a few hours or days immediately following some of the tests.

Those who visit islands known to have residual contamination and who eat local foods there may be at risk of higher exposures. If these activities are undertaken in moderation, the extra exposure from these visits may not pose health problems. People who wish to venture to these locations can obtain whole body counts locally to see the results of their actions and adjust them as desired. These islands are well known within the communities and, for the most part, were never suitable or used for habitation.

*Funding for Marshall Islands Programs*

**Question 3. It is encouraging to see a continued budget request for these DOE programs in the President's FY2006 Budget request. Can you give the Committee the specific amounts that are dedicated to the activities taking place on the ground in the RMI, including health care and costs to maintain the environmental program?**

**Answer 3.** See table below.

**UNITED STATES DEPARTMENT OF ENERGY**  
**MARSHALL ISLANDS PROGRAM AVERAGE ANNUAL EXPENDITURES**

Program Activity	Expenditures	Percent of Total
<b>Medical care – general:</b> Salaries for health professionals and administrative staff; medical supplies and equipment; local hospital and laboratory costs; pharmaceutical costs.	\$1,048,000	17%
<b>Medical care logistics – general:</b> Transport and provide living costs for health professionals, administrative staff, patients attending clinics in the Marshall Islands and patient escorts; maintain two clinic facilities; mammography services through the United States Army Hospital, Kwajalein.	\$934,000	15%
<b>Medical care logistics – patient referrals:</b> Transport and living costs for patients referred to Honolulu, Hawaii and patient escorts; medical care while in Hawaii; medical care for patients living in the continental United States.	\$384,000	6%
Subtotal, Special Medical Care Activities	\$2,366,000	38%
 <b>Radiological monitoring:</b> Conduct environmental radiological monitoring and characterization; laboratory analysis of samples and quality control; whole body counting support and technician training, applied research, and report preparation and communication. Design and implement the sampling strategy for each island; train technicians to collect, process and ship the samples; analyze samples, report results to communities and individuals, publish results to a public database.	\$2,684,000	42%
<b>Radiological monitoring logistics – general:</b> Provide air, land and sea transportation and ground support for radiological monitoring staff westward from Hawaii, maintain field stations on Bikini and Rongelap; support Enewetak laboratory facility; maintain offices in Majuro and on Kwajalein; pay local labor costs; provide utilities.	\$1,250,000	20%
Subtotal, Radiological Monitoring Activities	\$3,934,000	62%
Total, Marshall Islands Activities:	\$6,300,000	100%

**QUESTION FROM CONGRESSMAN PEARCE**

*Compensation for Other Groups*

**Question 1. The Republic of the Marshall Islands is asking for \$3.3 billion in compensation for nuclear testing. What is the amount of compensation paid by the United States for compensation to uranium mill workers, nuclear test site workers, and downwinders?**

**Answer 1.** The compensation program for uranium miners, millers, and downwinders (Radiation Exposure Compensation Act) is managed by the U.S. Department of Justice. We understand from the Department of Justice that as of August 21, 2005, awards to RECA claimants total \$947 million. Of this amount, \$74 million was paid out of the Energy Employees Occupational Illness Compensation Fund pursuant to P.L. 108-375 rather than the RECA Trust Fund. We understand from the Department of Labor that the Department of Labor has also paid an additional \$112M to these claimants to date under the Energy Employees' Occupational Illness Compensation Program Act.

*Criteria for Compensation*

**Question 2. The compensation for the Republic of the Marshall Islands is available for personal injury damages without proof of specific proof of causation. Why are we giving compensation to people without a specific cause, when we deny U.S. citizens the same compensation?**

**Answer 2.** Article IV of the Section 177 Settlement Agreement provides that the Government of the Marshall Islands establish a Claims Tribunal with sole jurisdiction to render final determination upon all claims relating to the Nuclear Testing Program. The 1986 settlement agreement between the United States and the Marshall Islands states that the United States would not be involved in the Tribunal's

adjudication or awards processes. The U.S. nuclear compensation cases are adjudicated by the Department of Justice and the Department of Labor based on legislation enacted by Congress.

*Criteria for Compensation*

**Question 3. Is radiation poisoning not on the list of compensable illnesses?**

**If not, why not?**

**Answer 3.** The Nuclear Claims Tribunal has chosen to award compensation to Marshall Islanders for radiation sickness (radiation poisoning) diagnosed between 1946 and 1958. Neither Part B of the Energy Employees Occupational Illness Compensation Program Act (EEOICPA), administered by the Department of Labor, nor the Radiation Exposure Compensation Act (RECA) Program, administered by Department of Justice, include this condition as a compensable illness. For these programs, inclusion of additional compensable illnesses would require a change in statute. However, Part E of EEOICPA covers illnesses arising from occupational exposure to all toxic substances, and therefore would cover this type of illness (provided that other eligibility requirements are met).

*Compensation for Nuclear Workers*

**Question 4. Wilburn Dunlap in my district just passed away (workflow #120464.) The Department of Justice said he didn't have a compensable illness and would not compensate him, even though he was one of the first workers at the Trinity Test Site, now White Sands Missile range, and was the first person to enter the Trinity Test Site crater on September 17, 1945 after a nuclear detonation. He was diagnosed with a cell mutation as a result of radiation poisoning. He had more than 550 gamma globulin shots and about 27 surgeries to stay alive, yet the U.S. Government unjustly would not compensate him for his illness. My office has been in contact with the Department of Energy, Department of Justice and Labor Department. Why do these agencies refuse to compensate either Wilbur, and now his family, even though there is ample evidence to show his illness was caused by working at the Trinity Test Site?**

**Answer 4.** The Department of Energy does not adjudicate compensation awards. We understand from the Department of Labor that Mr. Dunlap was denied compensation under Part B of the Energy Employees Occupational Illness Compensation Program Act due to a non-covered illness, but may be eligible for benefits under Part E of EEOICPA.

We understand from the Department of Justice that they adjudicated Mr. Dunlap's claims pursuant to the Radiation Exposure Compensation Act, 42 U.S.C. 2210 note (2000). The Act provides compensation to an individual who participated onsite in a test involving the atmospheric detonation of a nuclear device and subsequently developed a specified compensable disease. The medical evidence provided in support of Mr. Dunlap's claims indicate that he was diagnosed with a demyelinating neuropathy with monoclonal gammopathy, which is not a covered illness under the Act. The Department of Justice has no discretion to add to the list of specified compensable diseases. The inclusion of additional illnesses would require a legislative amendment to the statute.

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The CHAIRMAN. Thank you.  
Dr. Bouville.

**STATEMENT OF ANDRE BOUVILLE, Ph.D., DIVISION OF CANCER EPIDEMIOLOGY AND GENETICS, NATIONAL CANCER INSTITUTE, NATIONAL INSTITUTES OF HEALTH, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**

Dr. BOUVILLE. Chairman Pombo and Chairman Leach, members of the Committee on Resources and the International Relations Subcommittee on Asia and the Pacific, thank you for the opportunity to testify on behalf of the National Cancer Institute of the National Institutes of Health, an agency of the U.S. Department of Health and Human Services. My testimony will describe the findings from October 2004 correspondence with the Senate Committee

on Energy and Natural Resources, and will describe some of the scientific uncertainties associated with our findings.

I have submitted my full statement for the record.

Last summer, the Senate Committee on Energy and Natural Resources asked NCI for its expert opinion on the estimated numbers of baseline concepts and radiation-related illnesses from nuclear weapons testings in the Republic of the Marshall Islands. NCI provided the Senate Committee with the following estimates.

First, about 5,600 baseline cancer cases, that is, those which are expected to occur in the absence of exposure to fallout, may develop within the lifetime of the cohort alive during the test years from 1946 to 1958, with an estimated population sizes of about 14,000. About half of those baseline cases have already occurred.

In addition, about 500 cancer cases may develop as a result of exposure to fallout radiation. Hence, exposure to fallout could result in about a 9 percent increase in the total number of fatal and non-fatal cancers expected.

We estimate the thyroid gland was the most heavily exposed organ. Of the estimate additional 500 fallout related cancers, approximately 260 are expected to be thyroid cancer.

Finally, we expect that about 400 out of the estimated additional 500 excess cancer cases will occur in a 35 percent of the population who were under 10-years-old when exposed to fallout.

It should be recognized that the estimated number of cancers expected are highly uncertain because first those estimates are uncertain, second, baseline cancer rates are approximately, and third, organ-specific doses estimated for some atolls are so high that simple extrapolation based on the experience of other irradiated populations may not be appropriate. However, the doses were estimated so as to avoid significant underestimation of the numbers of radiation-related cancers expected to occur.

I would like to bring to your attention some of the assumptions and uncertainty that are factored into our estimates.

First, in the absence of baseline cancer rates for the Republic of the Marshall Islands, the rates representative of native Hawaiians were used as a surrogate.

Second, those models were developed in an unrefined fashion. They are, however, based on our years of experience and understanding of radiation dosimetry and weapons fallout. We used a simple data, all that was available to us, including monitoring data from the 1950s.

And third, while nearly one-third of the excess radiation-related cancers projected for the entire Marshall Islands could be attributed to cases on Rongelap and Ailinginae, we must emphasize that because of the extremely high radiation doses received at those two atolls, current risk projection models are likely to over predict incidence.

In summary, there are a large number of uncertainties associated with our estimates, only some of which could be reduced in the framework of a comprehensive study. In the long run this would require a large multi-disciplinary effort undertaken over several years at considerable cost. The decision whether to move forward with such a study must be made with the understanding that the likelihood of reducing significantly the uncertainty regarding

the total number of excess cancers is quite small. The incremental information thus gained would be of little practical significance in terms of public health management in the Marshall Islands. The NCI, therefore, does not believe that a comprehensive study should be conducted.

In the short term, NCI plans to submit the dosimetry and epidemiologic methods used to obtain this set of estimates to peer-review for publication in the scientific literature. In this way, our work can be verified, refined and employed by others who take an interest in the welfare of the islanders.

I hope this information about the development of NCI's estimate for baseline cancer incidence and radiation-related cancer risks in the population of the Marshall Islands has been helpful to you.

I would be pleased to answer your questions. Thank you.

[The prepared statement of Dr. Bouville follows:]

**Statement of André Bouville, Ph.D., Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, U.S. Department of Health and Human Services**

Chairman Pombo and Chairman Leach, Members of the Committee on Resources and the International Relations Subcommittee on Asia and the Pacific, thank you for the opportunity to testify on behalf of the National Cancer Institute (NCI) of the National Institutes of Health, an agency of the U.S. Department of Health and Human Services. I am André Bouville, Ph.D., lead radiation dosimetrist with the NCI's Division of Cancer Epidemiology and Genetics. My testimony will describe the findings from NCI's October 2004 correspondence with the Senate Committee on Energy and Natural Resources, discussed below, and will describe some of the scientific uncertainties associated with our findings.

Last summer, Senators Domenici and Bingaman of New Mexico, the Chairman and Ranking Minority Member of the Senate Committee on Energy and Natural Resources, asked NCI for "its expert opinion" on the estimated number of baseline cancers and radiation-related illnesses from nuclear weapons testing in the Republic of the Marshall Islands. Our Division was tasked with developing this response because of our robust research program in radiation epidemiology, dose reconstruction, and risk estimation.

We developed unrefined estimates of radiation doses and numbers of radiation-induced cancers, based on: (1) measurements of Iodine-131 (I-131) in the urine of adults from two islands, Rongelap and Ailinginae, collected after the test BRAVO in 1954; (2) measurements of the contents of Cesium-137 (Cs-137) and other radionuclides in the body of inhabitants of Rongelap and of Utrik who returned to their atolls in 1954 and 1957; and (3) environmental measurement data on radionuclide deposition provided for all atolls by the Marshall Islands-sponsored radiological survey completed in 1994. We combined these elements with a standard analytic approach to develop basic answers about cancer incidence. This is, to our knowledge, the first time radiation doses and numbers of radiation-induced cancers have been estimated in a systematic manner over the entirety of the territory of the Marshall Islands.

The NCI Director, Dr. Andrew von Eschenbach, sent his reply to the Senate Energy and Natural Resources Committee with the following estimates:

- About 5600 baseline cancer cases (i.e., those which are expected to occur, in the absence of exposure to fallout) may develop within the lifetime of the cohort alive during the test years 1946-1957, with an estimated population size of 13,940. About half of those baseline cases, approximately 2800, have already occurred.
- In addition, about 500 cancers may develop as a result of exposure to fallout radiation. Hence, exposure to fallout could result in about a 9 percent increase—to about 6100—in the total number of fatal and nonfatal cancers expected.
- We estimate that the thyroid gland was the most heavily exposed organ because it is the target organ for radioactive iodine, a major component of fallout. Of the estimated additional 500 fallout-related cancers, approximately 260 cases are expected to be thyroid cancer.

- We expect that about 400 out of the estimated additional 500 radiation-related cancer cases will occur in the 35 percent of the population who were under 10 years old when exposed to fallout. Since members of this age group are now between ages 50-60, almost all of those cancers are likely to have occurred by the end of the next few decades.
- Higher excess cancer rates are expected in the populations exposed to the highest doses that lived in the northern atolls.

Estimation of diseases other than cancer has not been made. Such work would require expertise and data not readily available in NCI.

To obtain the cancer risk figures I have presented, three calculations had to be made: we estimated doses, then baseline cancer rates, and derived radiation risks from epidemiologic studies of various irradiated populations. It should be recognized that the estimated numbers of cancers to be expected are highly uncertain, because: (1) dose estimates are uncertain; (2) baseline cancer rates are approximate; and (3) organ-specific doses estimated for some atolls are so high that simple extrapolations based on the experiences of other irradiated populations, such as A-bomb survivors, may not be appropriate. However, the doses were estimated so as to avoid significant under-estimation of the numbers of radiation-related cancers expected to occur.

I would like to bring to your attention the assumptions and uncertainties factored into our estimates:

- In the absence of registry-based baseline cancer rates for the Republic of the Marshall Islands, the NCI Surveillance, Epidemiology and End Results Program (SEER)<sup>1</sup> rates representative of native Hawaiians were used as a surrogate.
- Dose models were developed in an unrefined fashion. They are, however, based on our years of experience and understanding of radiation dosimetry and weapons fallout. We used as input data all that were available to us, including monitoring data from the 1950s.
- To present the best figures for this particular request, we made assumptions that likely have led to over-estimates of the average doses received and of the number of projected radiation-related cancers. For example, we assumed a population size from the 1958 census, even though most of the exposure was received years before when the population is believed to have been smaller. Lifetime cancer risks from radiation exposure were then estimated using risk projection models developed over many years at the NCI.
- While nearly one-third of the excess radiation-related cancers projected for the entire RMI could be attributed to cases on Rongelap and Ailinginae, we must emphasize that, because of the extremely high radiation doses received at those two atolls, current risk-projection models are likely to over-predict incidence. Since lifetime risk is generally proportional to dose, the assessment of lifetime risk for persons who received particularly high doses generates an estimate that all such persons will develop a radiation-related disease. Since we cannot say for certain that will be the case, the estimated numbers of radiation-related cancers over the whole nation should be treated as an upper limit of cases.

As NCI wrote in its response to the Senate questions, there is a large library of published scientific literature and estimation tools, many of which we used to develop unrefined dose and risk estimates for the exposed populations. What NCI did last summer was to perform the first dose-reconstruction for the entire Marshall Islands from available exposure data, and then develop risk assessment from mathematical tools not refined until 2003. Nevertheless, there are a large number of uncertainties associated with our estimates, only some of which could be reduced in the framework of a comprehensive study. In the long run, this would require a large, multidisciplinary effort undertaken over several years at considerable cost. The decision whether to move forward with such a study must be made with the understanding that the likelihood of reducing significantly the uncertainty regarding the total number of excess cancers is quite small. The incremental information thus gained would be of little practical significance in terms of public health management in the Marshall Islands. The NCI, therefore, does not believe that a comprehensive study should be conducted.

In the short term, NCI plans to submit the dosimetry and epidemiologic methods used to obtain this set of estimates to peer-review for publication in the scientific literature. In this way, our work can be verified, refined, and employed by others who take an interest in the welfare of the Islanders.

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<sup>1</sup>SEER: NCI's Surveillance, Epidemiology and End Results Program (<http://seer.cancer.gov/about/>) currently collects and publishes cancer incidence and survival data from 14 population-based cancer registries, including the State of Hawaii, and three supplemental registries covering approximately 26 percent of the U.S. population.

I hope this information about the development of NCI's estimates for baseline cancer incidence and radiation-related cancer risks in the population of the Marshall Islands has been helpful to you. I would be pleased to answer your questions.

Estimated rounded numbers of cancers  
in the Republic of the Marshall Islands

	Time period		
	1946- 2003	2004 and Future Years	Lifetime
<b>THYROID CANCERS</b>			
Without fallout	100	30	130
Due to fallout	160	100	260
Total	260	130	390
<b>Increase due to fallout</b>	<b>160%</b>	<b>330%</b>	<b>200%</b>
<b>ALL CANCERS</b>			
Without fallout	2 740	2 860	5 600
Due to fallout	240	290	530
Total	2 980	3 150	6 130
<b>Increase due to fallout</b>	<b>9%</b>	<b>10%</b>	<b>9%</b>

	Time period		
	1946-2003	2004+	Lifetime
	THYROID CANCERS		
Without fallout	100	30	130
Due to fallout	160	100	260
Total	260	130	390
Increase due to fallout	160%	330%	200%
ALL CANCERS			
Without fallout	2 740	2 860	5 600
Due to fallout	240	290	530
Total	2 980	3 150	6 130
Increase due to fallout	9%	10%	9%

Table 3. Estimated excess (radiation related) cancers by atoll group and organ

	Rongelap, Ailinginae	Utrik	Other northern atolls**	Southern atolls		Totals (number of baseline cancers in parentheses)
				Low exposure atolls***	Very low exposure atolls****	
Population size*	82	157	2005	3834	7862	13940
Leukemia	1.5	0.61	2.1	0.44	0.27	5 (123)
Thyroid	43†	46	132	26	15	262 (127)
Stomach	8.4	1.4	4.4	0.69	0.37	15 (326)
Colon	64†	31	49	9.2	4.0	157 ( 470)
Other cancers	31	8.5	39	8.6	5.9	93 (4550)
All Cancers combined (rounded totals)	148††	87	227	44	26	532 (5596)

\*Estimated from 1958 census (except for evacuated populations) as described in text.

\*\*Alluk, Mejit, Likiep, Wotho, Ujelang

\*\*\*Lae, Kwajalein, Maloelap, Namu, Arno, Mili

\*\*\*\*Lib, Aur, Ailinglaplap, Majuro, Ujae, Kili, Jaluit, Namorik, Ebon

†Based on linear-model estimates applied to doses far higher than those in other studied populations, and therefore the estimate of excess cases is likely to be a rough upper bound (see text). This caveat is less applicable to estimates for Utrik, and does not apply to the other atolls (see Table 1 for average doses by atoll).

††Estimated number of cancers exceeds number of exposed (see text)

The CHAIRMAN. Thank you. I thank all of the members of the panel for their testimony.

Mr. Krawitz, I would like to begin with you. Is it the position of the Administration that any responsibility that we had to the RMI

with relation to any needs was relinquished by the \$150 million, Section 177 Settlement, and are there any continuing needs that can legally be addressed outside of what we are calling changed circumstances?

Mr. KRAWITZ. Mr. Chairman, I can't actually answer the question concerning needs that need to be addressed outside. I can answer your question concerning the Administration's feeling concerning the settlement which was achieved in 1986.

My understanding, that the Section 177 of the Compact and the Section 177 Settlement Agreement, which was incorporated into the Compact, constituted a full settlement of all aspects of all nuclear test-related claims involving the United States and the Republic of the Marshall Islands, and that both sides accepted that at that—the settlement at that time when they brought the original Compact into effect.

On the renegotiation of the Compact just recently, the amended Compact went into effect in 2004, there was no basis for addressing that settlement agreement or that section, and in fact, that whole language was incorporated into the new compact in total unchanged. I believe I'm correct on that.

When we brought the new compact into effect in May of 2004, this was in fact a reaffirmation by both sides that the full settlement was in fact agreed upon by both sides and that there was no change. Article IX does allow for the Republic of the Marshall Islands to make a request. We agree with that, and there is a test that's built into there, the five conditions that I read in my probably too long testimony. But again, there are no guarantees. It is the ability to make a request, and in order for this to be considered, they have to meet the test, and in our opinion, they did not meet the criteria that were set forth.

We don't take a position—I want to reiterate what I said in my testimony, we were only asked—and I disagree slightly with the distinguished Member's statement that it's the State Department's position. It's the Administration's position. We were asked on behalf of the Administration to oversee an evaluation of the request. Our position is that the evaluation only of just that specific question of whether or not this request met those criteria as defined in Article IX which allowed such a request to be made. We do not take a position on whether or not there are other needs, whether there should be other programs. This was not within the view of what we were asked to do at that time. I hope that answers your question, sir.

The CHAIRMAN. Yes, I believe it does, but just to reiterate what you are saying, your testimony, the Administration position is only in terms of this petition?

Mr. KRAWITZ. Yes, sir. To the best of my knowledge we were only asked to look at this position and to coordinate with our colleagues to do a response on the criteria that would either qualify or not qualify, and that's all we were concerned at in this specific case. We addressed nothing else.

The CHAIRMAN. Thank you.

Mr. Cary, given the extensive environmental monitoring programs, it would appear that conditions in even the most directly affected four atolls are shown to be safe for habitation. For this rea-

son it would seem that the petition request for 2.3 billion for the health care needs would not be similar to the needs of those in a current DOE health program. Your testimony seems to assert that citizens growing up in the RMI should no longer see the direct effects of the U.S. nuclear tests. Is this an accurate assessment of your testimony?

Mr. CARY. Sir, my testimony is directed to the very narrow historic program of the Department of Energy, and our experience has come from dealing with medical patients from Rongelap and Utrik, which by general consensus were the most affected areas.

We have excellent history on those patients, have a good relationship with those patients, and we continue to serve them. But it's too difficult for me to extrapolate from that to other populations in the Marshall Islands. We've had good success with our cohort and it's a very narrowly defined program which we've tried to pursue as effectively and economically as possible.

The CHAIRMAN. Thank you. My time is about expired.

I am going to recognize Chairman Leach for any questions he has.

Mr. LEACH. I will be brief. I want to ask Dr. Bouville a question. You are head of the Division of Cancer Epidemiology and Genetics. How old is this division?

Dr. BOUVILLE. I'm not head of the division, I'm sorry, but I'm the lead dosimetrist in that division. I think the division is about 20-years-old.

Mr. LEACH. The reason I raise it is in this circumstance I think the Department of State—and I want to make it the Department of State, not just the Administration—has a credible position that is legal. But the idea of nuclear testing is 60-years-old. It was 1945 that the first atomic bomb went off. And you are in a division that is all about modern things, genetics, epidemiology of cancer, that didn't exist even 30 or 40 years ago. And so when we are looking at issues of this nature it strikes me that one can speak with some definitiveness about legality, but it is pretty hard to speak with definitiveness about health consequences, about something that is so new to human existence. It is one of the reasons why I think America should have a bit of an open mind on these kinds of issues, because we don't know lots of things. And we do know in this instance that we are responsible. So we have kind of the known of responsibility, the unknown of consequence, and I think we have to keep an open mind, and I just raise it in that regard.

Now, as a doctor, does that seem like an unreasonable thing? Your colleague has suggested they have a bit of a track record with some American analog situations, which presents some basis for a health care assessment. But isn't it fair to say that there are things here we just don't completely comprehend?

Dr. BOUVILLE. Well, of course, of course I must agree with you.

Mr. LEACH. Thank you very much.

The CHAIRMAN. Mr. Faleomavaega.

Mr. FALEOMAVAEGA. Thank you, Mr. Chairman. As a follow up to Chairman Leach's question and expressing similar concern, Dr. Bouville, you said that the estimates are somewhat—as I quote from you—"highly uncertain." I think I hear a quote also that the

total population of the Marshalls at the time was about 14,000 people.

Mr. Chairman, I would like to ask unanimous consent. I am sorry, I don't have in my possession a document that was recently declassified, indicating that the entire archipelago of the Marshall Islands were severely exposed to nuclear radiation, not just the northern part of the Marshalls where Rongelap and Utrik and Bikini, the entire Marshall Islands group was severely exposed. It has the contents of this military report that I saw.

And I would like to ask Dr. Bouville, what is the usual that a human can take as far as radiation, how many rems? I am not a scientist so I can't put it in better terms.

Dr. BOUVILLE. The average effective dose received for natural background radiation all over the world is estimated to be about 2 millisevert per year.

Mr. FALEOMAVAEGA. I am sorry?

Dr. BOUVILLE. It's about 2 millisevert per year.

Mr. FALEOMAVAEGA. Two milli?

Dr. BOUVILLE. Dose of the United Nations figures on average for the entire world population. Now, if you refer to the Republic of the Marshall Islands, I guess some of the exposures will not be as high, again, as due to natural background radiation, meaning cosmic rays from the sky, and uranium, natural uranium and thorium in the ground. My own estimation would be that the average background radiation would be about 1 millisevert per year in the Republic of Marshall Islands.

Mr. FALEOMAVAEGA. As I recall in reading it, I don't know whether you call them rems—it was several hundreds, in the thousands even among some of the islands. And here again I am expressing a layman's point of view because I don't have the document, but I will send it to you personally so you can see it for yourself.

Secretary Krawitz, you indicated five criteria the State Department has given to consider what is a substantial change under the provisions of the Compact. Was this something done by the State Department or was this by mutual agreement with the Marshall Islands?

Mr. KRAWITZ. No, sir. This is taken directly from the Compact. The 1986 Compact of Free Association is actually incorporated—I'm not a lawyer—in Article IX of Section 177 of the agreement, so this is actually public law, as far as I understand.

Mr. FALEOMAVAEGA. I notice you have also quoted several hundred millions of dollars that have gone extensively for the Marshall Islands for their benefit, but I just fail to see how this fact that you equate millions of dollars to the lives of these people, who were exposed severely to nuclear radiation. It is not a very good experience when you meet with five women who have had to have five operations as a result of thyroid cancer. Some of these women could hardly speak to me when I talked to them, and that is just a real small little sample of the seriousness of this situation, and I really would respectfully request that the State Department show a little sense of conscience in terms of what we are trying to do here.

These people had no idea what we were going to do to them. We have experimented with pigs, with sheep, with cows and all of this,

and then also people themselves. I think we have a moral obligation to do what we can to help these people, and I just honestly believe in my honest opinion, Secretary Krawitz, we are not doing enough.

Mr. KRAWITZ. With all respect, sir, I am not equating dollars with lives or with people. We were asked whether or not the U.S. Government has taken any steps to try to alleviate some of the suffering and damage, and the Administration's position is that we have in fact tried to do things through programs. It's very difficult to measure programs in ways that are understandable to all, but one way that most people do understand is how much—how many resources do you put into a program.

The numbers that I took are from the appendices of the report that we have submitted, the Administration's report to Congress evaluating the request—

Mr. FALEOMAVAEGA. Secretary Krawitz, my time is limited. I just want to put it this way. It is very easy to equate, when you mention all these hundreds of millions of dollars, and when Dr. Bouville comes up and says it is highly uncertain numbers that we are dealing with, it seems to me a total contradiction here in terms of what—are we really helping these people? And I submit I don't think we are doing enough to provide the kind of help that they have been asking for all these years.

My time is up, Mr. Chairman. Thank you.

The CHAIRMAN. Further questions? Mr. Gilchrest.

Mr. GILCHREST. Thank you, Mr. Chairman.

I guess this would be to the medical doctor/researcher, or actually any one of the panelists. Are there any areas of the Marshall Islands today still uninhabitable as a result of the testing? Radioactivity in the soil, things like that, any area of the Marshall Islands that cannot be inhabited?

Mr. CARY. As part of the initial Compact, agreements were made that circumstances would have to be taken so that resettlement could take place. The best example is Rongelap atoll, where we in the Department of Energy have been working with Lawrence Livermore National Laboratory to assist their resettlement efforts.

Mr. GILCHREST. Are the resettlement efforts ongoing now?

Mr. CARY. Yes, sir.

Mr. GILCHREST. Are the resettlement efforts based on—I guess the question is, is there any area of the Marshall Islands where you would not want resettlement because there is radioactivity still in the soil?

Mr. CARY. Yes, sir, there is. And let me—if I may explain a little further what we're doing at Rongelap. Our goal is not to meet a certain guideline or standard, but to have radiation levels as low as reasonably possible.

Mr. GILCHREST. Can you do anything to remediate the radiation or is it just naturally degrading?

Mr. CARY. It's naturally degrading, the cesium there is, but what we're doing in the areas, the residential areas where they're planning to move in, we're taking out a foot—and most of this has been done already—a foot of the soil has been taken out and crushed coral's been brought in. These are residences—

Mr. GILCHREST. Crushed coral?

Mr. CARY. Crushed coral, yeah.

Mr. GILCHREST. From coral reefs?

Mr. CARY. Yeah. Well, this is all a coral reef. The Marshall Islands, there's plenty of it there, sir.

Mr. GILCHREST. OK.

Mr. CARY. And so—

Mr. GILCHREST. Have the hearing on coral reefs.

[Laughter.]

Mr. GILCHREST. Thank you. I appreciate what you are attempting to do and I don't mean to cut you off, but I have a series of questions.

Is anyone alive today in the Marshall Islands that is being treated for a disease that can be connected to the testing?

Mr. CARY. Well, by congressional mandate, sir, there are 253 individuals on Rongelap and Utrik that we've been treating since they were subjected to fallout.

Mr. GILCHREST. So there are 251 people today—

Mr. CARY. 253.

Mr. GILCHREST. 253.

Mr. CARY. Of the original cohort. That group is now under 200 individuals. We do annual medical exams on these individuals. We have clinics in Majuro and in Kwajalein, and folks are brought to the Straub Clinic in Hawaii for treatment or surgery if they need it.

Mr. GILCHREST. I see. Do you have a number of people—I didn't see it on the list here—that have actually died as a result of the fallout, because of the testing?

Mr. CARY. I'll have to submit that information to you for the record.

Mr. GILCHREST. OK. Is there any reason that we continued the testing from '46 to '58, I think you said, knowing the problems that humans would have with exposure to radiation?

Mr. CARY. The Department of Defense made a series of decisions.

Mr. GILCHREST. We were teenagers back then so we didn't make those decisions. But I am just curious looking back now. I remember when I was, I don't know, early 20s or something when the Chinese set off their first nuclear weapon and they said it was affecting cows where I lived. So whether that is true or not, I don't know. We didn't get really upset about that.

Mr. FALEOMAVAEGA. Would the gentleman yield?

Mr. GILCHREST. Sure.

Mr. FALEOMAVAEGA. I want to say it is my understanding the reason why we changed the place to conduct our nuclear testing program, because of the carryover of these nuclear clouds that we produce from the Marshall Islands, it went all the way to Minnesota and Wisconsin and they found Strontium-90 in milk products from these two States. So we decided to go somewhere else, and it was Nevada.

Mr. GILCHREST. Underground.

Mr. FALEOMAVAEGA. That was the reason why we had to leave the Marshall Islands.

Mr. GILCHREST. So we tested from '46 to '58. Was there some sense or some understanding that—the doctor said that there was an increase—I think I got this right—there was some suspected

increase in cancer as a result of the fallout would be 9 percent over the natural rate of cancer. Was that information that you just gave us probably known in the 1950s?

Mr. CARY. No, sir.

Mr. GILCHREST. I see. So there are some areas left contaminated with radioactivity, if I could use that word, that is ongoing mitigation. There are some people that are still continuing to receive medical treatment as a result of the ongoing—well, the problem with the fallout. I guess they are my age or older I would suspect.

Mr. CARY. That's right, sir. We're doing environmental monitoring on four atolls, Bikini, Enewetak, Rongelap and Utrik, and we're doing medical monitoring and treatment for folks from Rongelap and Utrik atolls.

Mr. GILCHREST. I see. Thank you very much, Mr. Chairman.

The CHAIRMAN. Further questions? Mr. Kildee.

Mr. KILDEE. 29 years ago, when I think Mr. Leach and I arrived in Congress, Phil Burton told me that we could judge the greatness of a Nation on how it related to those who are less wealthy and less powerful. And with the Republic of the Marshall Islands we even have a stronger connection because of the great responsibility we have because of the damage we inflicted upon those people. I just want to say this, that I associate myself entirely with the position of Mr. Faleomavaega, and my voting pattern will follow his example. He has been one who has guided me well politically and morally, and Eni, I will be following you.

Thank you very much, Mr. Chairman.

The CHAIRMAN. Further questions? Mr. Fortuno.

Mr. FORTUNO. Thank you, Mr. Chairman.

There are some questions for Dr. Bouville. Are there any indications of any other diseases as a result of exposure to the nuclear testing? I understand in your statement you mentioned that no estimations have been made. Are there any preliminary indications at all of any other type of diseases as a result of the nuclear testing?

Dr. BOUVILLE. I'm afraid that we'll have to consult with other members of the NCI team about this since that's not my field at all. But I would be happy to provide a response for the record.

Mr. FORTUNO. What would it take to assess whether there are other diseases as a result—other than cancer, as a result of the testing? What type of testing would you say would it take, or is there a Phase I, Phase II on the environmental side that you would conduct?

Dr. BOUVILLE. Well, up to about five years ago, it was assumed that radiation could only cause cancer, and the non-cancer effects are relatively new. And as far as I know they are not as frequent as the cancer effects, and this is why I would rather defer to my colleagues to answer that question. Personally, I believe it to be very difficult to detect an increase of non-cancer effects, but I will provide you an official response for the record.

Mr. FORTUNO. Thank you. Could you very briefly go over what other non-cancer medical effects are we now finding out about recently?

Dr. BOUVILLE. Well, you will find most of this information in the statement I submitted for the record. But basically most of the ex-

cess in cancer that we expect are for thyroid and colon because we estimate that most of the exposure was due to ingestion of food-stuffs.

Mr. FORTUNO. Any genetic defects that will be passed down to other generations that you would think?

Dr. BOUVILLE. Again, the consensus among researchers is that this is really a second-order effect if it exists. There are detailed studies going on among the A-bomb survivors to detect the number of genetic effects among the population that were exposed due to the tests at the Hiroshima and Nagasaki. That will be clearly a second order effect, but again, I would be happy to provide a response for the record.

Mr. FORTUNO. Thank you very much, doctor.

Thank you, Mr. Chairman.

The CHAIRMAN. Further questions? Mr. Abercrombie?

Mr. ABERCROMBIE. Thank you very much, Mr. Chairman. Mr. Chairman, I want to state to our friends here, we are not trying to make you villains in this piece here, but there are serious questions to be answered that you can only answer from an institutional basis, and that is the direction of my questions.

Mr. Chairman, I have a further bias here I feel I should say because I feel very strongly about this issue because I am probably one of the few people who has actually seen an atomic test in the Pacific because I got to witness it from Hawaii in the atmosphere in 1962, hundreds of miles away, when the sky lit up, when the—I don't know if Eni was out there at that time, but let me tell you, it shocked me. We had no idea, even though we had been told there was going to be a test, nobody had any idea that it would actually be able to be seen in Hawaii. And as I say, the sky lit up in this very strange strawberry color.

And I, in a certain sense, vowed to myself then, and one of the things that propelled me into politics was the idea of dealing with nonproliferation and trying to end testing and so on, because it occurred to me that if we could see it we probably were going to be able to have the results of it float through the air to us as well even though we were hundreds of miles away.

Having said that, I need to ask two or three questions that I think will establish why we do have an obligation, a legal obligation to deal with changed circumstances. Whether it amounts to the same thing as what the Marshall Islands requested of us, Mr. Chairman, is up to you and the committee members to make a decision. But I do think that the basis for changed circumstances exists.

Dr. Bouville, if I read correctly on page 4 of your testimony, the baseline figures that you are giving to us, it says, "In the absence of registry-based baseline cancer rates for the Republic of the Marshall Islands, the NCI Surveillance, Epidemiology and End Results Program", commonly known as SEER, "rates representative of native Hawaiians were used as a surrogate."

So you have never actually really measured even the quarter of the population that is mentioned, I believe, in the State Department report, you never measured the 56,000 people over and above what has been done by Dr. Cary and the Health section of the De-

partment of Energy. You are using the native Hawaiian cancer rate as a surrogate for all of this, right?

Dr. BOUVILLE. That's correct.

Mr. ABERCROMBIE. See, I mean, this is—we can't do this. And that takes me to the State Department. Did the State Department take into account that there has never actually been a measurement in the Marshall Islands of what happened with the testing that went on for a number of years and that we are using for just the cancer rate alone, the baseline cancer rate, that which exists for native Hawaiians?

Mr. KRAWITZ. No, sir, because the State Department was only asked to compile, to put together—well, but this is—

Mr. ABERCROMBIE. I understand.

Mr. KRAWITZ. This is part of the problem. We are not a scientific institution, nor do we run programs.

Mr. ABERCROMBIE. No, no, I understand. I am asking you in the context of the five criteria did you take into account when trying to determine whether or not all the articles had been met for legal purposes under the State Department that there had been no adequate measurement of the Marshall Islands, of the population of the Marshall Islands either in part or in whole?

Mr. KRAWITZ. I can't answer that question, sir.

Mr. ABERCROMBIE. OK. Then the last thing, it is true, is it not, Dr. Cary—I am saying Dr. Cary, excuse me. I am not sure whether I have said that correctly. It is Mr. Secretary. Yes. Mr. Secretary, I beg your pardon, I misread this.

But Mr. Secretary, the narrow focus that you spoke of refers to, does it not, the program that the DOE has essentially with Bikini, Enewetak, Rongelap and Utrik, right?

Mr. CARY. Yes, sir.

Mr. ABERCROMBIE. And that constitutes less than 200 individuals. I believe your statement says 194 individuals at this time. In effect, if I draw a parallel to the Hansen's Disease Program in Hawaii now, these folks represent the remnants of that original concentration of the DOE Health Department section over these past years, correct?

Mr. CARY. Yes, sir.

Mr. ABERCROMBIE. So in a certain sense you can't speak authoritatively to the question that I asked Dr. Bouville in the beginning about whether or not a comprehensive survey had been made, even to this day, as to the effect of radiation over the 50 plus thousand people in the Marshalls?

Mr. CARY. That's correct, sir.

Mr. ABERCROMBIE. Thank you.

Mr. Chairman, I believe that every member of the panel has given testimony with respect to their particular section of responsibility that they have, and I think they have spoken straightforwardly and truthfully. Unfortunately, I don't think that it addresses the question that we have to answer legislatively speaking with regard to whether changed circumstances exist.

My proposition would be for the Committee to take under consideration is, is that the changed circumstances are that the Compact as written, and written in good faith and passed in good faith, really doesn't take into account the questions raised in the changed

circumstances petition, and that absent our ability to answer those questions, we need to take into account whether in fact changed circumstances do exist. Namely we have to have a much more comprehensive understanding of what the radiation fallout did and what the consequences are today, and then what our obligations are legislatively as a result.

Thank you.

The CHAIRMAN. Thank you.

Further questions? Mr. Flake.

Mr. FLAKE. Thank you, Mr. Chairman.

The 200 or so that are still living that were directly affected, where are they living now? Are they on Ebon or are they on the affected islands?

Mr. CARY. They're on a number of islands or atolls in the Marshall Islands. Some have relocated to Hawaii. Some are in the continental U.S.

Mr. FLAKE. With regard to the request, the summary here, Section 177 has to do with the Compact of Free Association, it doesn't have to do with the claim issue, but it is included here within. Why is that? That is a creature, the Compact of Free Association, that is a different process, yet it is included with these other issues. Does that make sense? I am sorry.

Mr. CARY. The 177 program is not the DOE program, sir.

Mr. FLAKE. But all these are included here one after the other. Can somebody speak as to why 177, the 45 million a year for 50 years, is included with the others; is that not a separate issue?

Mr. KRAWITZ. If I understand you correctly, your question, sir, the 177 is mentioned because under the compact that we negotiated in 1968—1986, the original Compact of Free Association, this was one of the issues that came up for negotiation, the question of the nuclear legacy and the problems and the health issues and that—and this actually is part of the compact, part of the public law that Congress passed as law. And the Article IX within the 177 section allows the Government of the Marshall Islands, Republic of the Marshall Islands, to ask the Congress to consider if they—it allows them to present to Congress a case that there are changed circumstances which would allow for additional compensation. That's the reason, if I understand, why 177 is mentioned and Article IX is mentioned.

Mr. FLAKE. OK.

Mr. KRAWITZ. Some of these programs come under this. Some programs that I mentioned are part of the health programs and education programs of the compact and some are specially mandated programs which the Congress set up for the Department of Energy and others.

Mr. FLAKE. If the request for changed circumstances, if nothing is granted or nothing changes, still the 177 with the 45 million for 50 years continues on.

Mr. KRAWITZ. No, sir. 177, there was a separate—there was a settlement agreement under Section 177 which was—and again I'm referring back to the law—is a full settlement of all claims, et cetera. At that time \$150 million was established to set up a Nuclear Claims Fund and Section 177 made provision for a Nuclear Claims Tribunal. The tribunal was given full responsibility to work

with the Government of the Marshall Islands. The United States did not participate. We were not part of the awards or decisions process, and there were some other monies and all—I'm not an expert on all this—but there were some other monies and programs that were figured in as part of the settlement. This was in addition to the compact provisions under Title 2 that were providing economic assistance for education and health and other things.

Mr. FLAKE. Thank you.

The CHAIRMAN. Ms. Bordallo.

Ms. BORDALLO. Thank you very much, Mr. Chairman.

My question goes to Secretary Krawitz. Mr. Secretary, I have a question for you. Given the conclusive nature of the Administration's response to the petition, it is challenging to ascertain under what circumstances or conditions the Administration might recognize or concur with as having truly changed. With your testimony today earlier, it appears that the Administration, under very limited circumstances, would accept these circumstances as having changed since the Section 177 Agreement was formulated. Is this a fair characterization of the Administration's position and response to the changed circumstances petition? Can you, for example, please explain to the Committee the thresholds that must be met in order for the Administration to recognize the circumstances as having changed since 1986? What key tangible evidence must materialize before you accept the relevancy of the Article IX provision?

Mr. KRAWITZ. I apologize at the onset for my answer, ma'am, because I can't answer that question. We, the State Department will not be able to give you an answer on what constitutes a changed circumstance and what doesn't. The whole concept, as I understand it, is that the interagency process, all the expert and technical agencies would look at all the facets of the petition as it's presented or the request as it's presented, and they would make a determination. Again I have to reiterate the State Department is a policy organ. We don't run programs and we don't have funding and we don't have monies. We were asked on behalf of the whole, you know, administration, to put together—my understanding of the process was that the Congress asked the President to do an evaluation. The President sent it to OMB. OMB sent it to us and asked us to pull together this process.

The actual work that was done, the State Department did not do. We do not have the scientific or technical expertise or the medical expertise to be able to do these studies. So in effect what we were were the final editors and compilers of this interagency process. We put it into the final form and we sent it forward to the Congress as requested.

So I cannot give you an answer on what constitutes acceptable thresholds or meeting conditions or any of that sort of thing. That's a very technical area.

Ms. BORDALLO. So in other words you don't have any data.

Mr. KRAWITZ. No, ma'am.

Ms. BORDALLO. Do you work at all with the other agencies that are witnesses here today, health agencies and—

Mr. KRAWITZ. Other agencies would probably gladly give us data but we couldn't interpret it. See, my point is that it's—the State Department did not make a decision. It's an interagency process.

Ms. BORDALLO. I understand that, I understand that. But it seems to me that, you know, agencies can work together, and you should come up with some answers here before the committee. This is why we're here.

Mr. KRAWITZ. Well, the question—it depends—the question at hand is a technical question and we're not qualified—at least to my experience we're not qualified to do this. I mean if you were to ask us from a policy perspective something about—if there had been a policy perspective in the petition, perhaps we would have been able to do this. But it's not. It's a question of radioactive—the after effects of nuclear testing, health issues, medical care and—of course we see the data that our colleagues from the other agencies give us, but quite frankly, we are merely purveyors of information. We do not interpret them.

Ms. BORDALLO. Thank you very much.

Mr. Chairman, I would like to associate myself with Chairman Leach and his comments earlier. I support the RMI in their quest to reexamine the adequacy of the Section 177 Agreement given the scientific advancements that have been made over the past 20 years. I think this is only a fair conclusion, and I just want to go on record as stating that. Thank you.

The CHAIRMAN. Thank you.

Further questions? Mr. Rohrabacher?

Mr. ROHRABACHER. I am sorry I was a little bit late. This might be a bit redundant, but when we hear all this talk about an interagency process making decisions, I mean this is pretty frightening when you think that people's future and their lives are in the hands of something as nebulous and undefinable as you just presented your case.

Mr. Secretary, let me ask you this, how important were the nuclear weapons and other weapons that were developed in the Marshall Islands to American security during the 1950s and '60s? Where would you place the impact?

Mr. KRAWITZ. I can't even start to answer that question, sir.

Mr. ROHRABACHER. You can't?

Mr. KRAWITZ. No, I cannot.

Mr. ROHRABACHER. It seems to me that even a civilian would be able to answer that question, that the weapons that were tested there were vitally important to America's national security and that these tests were thought to be something that without them America would have been a less safe place, the world might have been drawn into a war had we not developed some of the weapons. Isn't that correct?

Mr. KRAWITZ. That may be, sir. If you ask me as an individual and a person who did serve in the military, I might be able to give you an answer. But unfortunately, my position today is to speak only to this specific topic and I can't give you an answer.

Mr. ROHRABACHER. That is why some of us don't trust interagency processes.

[Laughter.]

Mr. KRAWITZ. That might be.

Mr. ROHRABACHER. Let me as you then, in terms of the sacrifice that people made over the years to make sure our country was safe, could you make a comparison between the price that was paid by the people of the Marshall Islands in terms of providing these weapons testing and thus the national security we derived from these weapons, as compared to the price that the average typical American paid for the development of these weapons? Would you say they paid a much higher price or about the same or didn't pay much price at all for it?

Mr. KRAWITZ. If I might, sir, let me answer your question from a different perspective. I don't want to compare prices and sacrifices that people made. We do—I think my testimony makes it clear we do greatly appreciate the friendship and the support of the people of the Marshall Islands. We have all the way through, way back from our earliest—I mentioned that it's a longstanding and unique friendship. It's a unique relationship. I will go a little bit outside of my mandate to say even today citizens of the Republic of the Marshall Islands serve in the U.S. military, the armed forces. They serve with distinction in Afghanistan and in Iraq. There's no question that we think that we—as I said in my statement, that we remain committed. We know that the test did exact a toll. We have tried—the Hon. Mr. Faleomavaega asked me about dollar values. I am not equating dollar values with life, but when you try to explain how much did you do in terms of dollar values they represent medical programs, they represent medical facilities, they represent attempts to do the right thing. Yes, they're not the same thing. But—

Mr. ROHRABACHER. I guess what I am trying to get at is perhaps we are talking about more than friendship here. I mean you can have a friend who you don't owe a great debt to, who didn't do a tremendous service for your family or whatever. And in this case we have friends, yes, the Marshall Islands, we have friends all over the world. But we have people who paid a tremendous price, from what I can see, compared to what typical Americans paid, to do something that was of ultimate importance to our national security back in the 1950s and '60s. And so I would just suggest that when we're talking about, you know, making these indeterminate decisions, how do we determine this and that—and I know you are expressing what is somewhat nebulous within the law—but it would seem to me that it would require us to bend over backwards for people who paid a higher price for something that was so important. Wouldn't you say that?

Mr. FALEOMAVAEGA. Would the gentleman yield?

Mr. ROHRABACHER. Let him answer the question, then I will be happy to yield to my good friend.

Mr. KRAWITZ. I am going to check with my lawyers, but I believe there's a provision in the law which allows the Congress—I believe it's Section 103—to make ex gratia payments or compensation. I would say that whereas I can't speak to that, my task was to speak specifically toward a review of this specific request. It was not to go farther about whether sacrifices were made or who deserves what. I do feel comfortable in saying that I do believe there is provision in the law for the Congress to act if it deems fit to—

Mr. ROHRABACHER. Let me just note before I yield to my friend, Mr. Faleomavaega, that some of us would feel a lot better if you were able to express that and the Administration was able to express that in a little more sensitive way.

Mr. Faleomavaega.

Mr. FALEOMAVAEGA. I thank my good friend for yielding, and certainly appreciate his concerns about the issues that we are discussing this afternoon.

In terms of, if I were to make a comparative—if my colleague may not be aware, the first testing of our hydrogen bomb was in the Marshall Islands. It was known as the "BRAVO" test. And the figurings on that, when we exploded the BRAVO test or the hydrogen bomb, the first hydrogen bomb, it was 15 megatons, which is equivalent to 1,000 times more powerful than the atomic bombs we dropped in Hiroshima and Nagasaki. So if you want to talk about sacrifice—and incidentally too, Mr. Chairman, and my good friend, the winds had shifted right in the direction where these people in Rongelap and Utrik were living, but our Government went ahead and made a decision to go ahead and explode the bomb. And as a result of that, this is why these people were exposed severely. When I say severely, I have here the document in millirems, 202,000 millirems in the island of Rongelap, and in Utrik it was some 24,000 millirems. Millirems, a normal human being can take about 100 millirems. Now can you imagine 202,000 millirems that these people had to take as a result of the explosion that we did, the BRAVO test that we did in the Marshalls, and there were several others. The Soviet Union exploded a 50-megaton hydrogen bomb in Kazakhstan. So in terms about the rivalry and in terms of the Cold War and what we were trying to do on behalf of freedom-loving people, I submit, I think our good people of the Marshall Islands literally made a tremendous sacrifice on our behalf.

I thank the gentleman for yielding.

The CHAIRMAN. The Gentleman's time expired. I recognize Mrs. Christensen.

Mrs. CHRISTENSEN. Thank you.

I want to ask some questions to Mr. Krawitz. And this really is a question directly to the report. In the Administration's report on the RMI, a petition recognized that some RMI requests might be desirable and tacitly recommended that the programs for occupational safety, nuclear stewardship and nuclear education could receive further consideration for a sector grant if it was included in the RMI's budget. Is the Administration willing to consider grant funding for these activities as requested by RMI in the petition?

Mr. KRAWITZ. I can't, again, the State Department doesn't have funds. This would be the Department of the Interior who does all sector grants. I do sit on what's called the Joint Economic Management Committee, the JEMCO. That again is the Health and Human Services, the State Department and—

Mrs. CHRISTENSEN. But you would support their request?

Mr. KRAWITZ. Things like that we believe—again, I hate to sound like a broken record. This addresses, what I'm speaking about today addresses only specifically the very narrow question of this specific request. It does not talk about our overall relationship or—

Mrs. CHRISTENSEN. Right. But since it seemed to have been suggested in the report itself, I am just trying to ascertain that you would support those requests.

Mr. KRAWITZ. I think, yes, ma'am, I believe I personally would support something like that. I do sit on that committee. I think that is a reasonable approach. I think that other methods—we're not arguing that maybe nothing should be done. We're just saying that the approach that we're taking here is not something that we can support based on what was presented.

Mrs. CHRISTENSEN. OK, thank you. Another question again to you, Mr. Krawitz, prior to Congress taking action on Compact II, there were a series of negotiation sessions outlining the continuing and future relationship between the U.S. and RMI. During this period was it the position of the U.S. that nuclear-related issues fell outside of the scope of Compact II negotiations and that such issues would eventually be addressed within the context of the Changed Circumstances Petition? Is that the understanding?

Mr. KRAWITZ. My understanding—and I was part of some of the latter negotiations—is that this was considered to be a full settlement that was consummated under the original compact. It's incorporated in it. That's why the 177 was incorporated into the amended compacts in its entirety, was not addressed because it was not considered an open issue.

Mrs. CHRISTENSEN. So you are saying that the nuclear related issues were considered to fall inside the scope of Compact II?

Mr. KRAWITZ. No, ma'am. 177 handled those, but that was carried in toto, in entirety into—it's part of—not Compact II—we should call them the amended compacts. The compacts actually continue to exist. This is an amended compact that we put into force in 2004.

Mrs. CHRISTENSEN. My follow-up question would be around whether the funding provided to RMI under Compact II, which were for non-nuclear related issues, if I understand, that there was a separate section for the nuclear issues. The question was did nuclear-related issues fall inside or outside of the scope of Compact II negotiations?

Mr. KRAWITZ. Outside, I believe.

Mrs. CHRISTENSEN. Outside, outside. So then is it fair for the Administration's report to suggest that funding provided to the RMI under Compact II, which are for non-nuclear-related issues, that they be used for nuclear-related issues, because that is what the report seems to suggest?

Mr. KRAWITZ. I'm not trying to be evasive, but it's a difficult question. In the sense that since the petition talks about health care for the whole country you could look at it that way because under the second compact, under the amended compacts we have what we call sector grants. One of the top priority grants is health care. Education is another one. So to the extent that you're talking about health care to be made available for all members of the population, yes, I guess you could argue that Compact II addresses—I shouldn't say Compact II—the amended compacts address that because health care grants are available, but they're not specifically, you know, nuclear related. They are health care period, the general health and well-being of the population, and they were not de-

signed to address nuclear-related issues, although I guess if it turns out in practicality that they touch on that, that's just part of general public health programs I would think.

Mrs. CHRISTENSEN. I have a question for Assistant Secretary, Deputy Assistant Secretary Cary. Although some documents related to our nuclear testing programs in the Marshall Islands were declassified in the mid '90s, DOE has yet to declassify all of the documents related to the program, as I understand it. Your testimony mentions that the Lawrence Livermore was able to review classified material and issue a report to assuage RMI concern about a specific neurotoxin. Has the Department of Energy or any other authorized entity conducted a thorough review of all remaining classified material related to nuclear testing in the Marshall Islands? And could you discuss the policy on how any future review could begin on that remaining classified material, keeping in mind national security concerns, but also providing the RMI with a greater sense of the degree of contamination?

Mr. CARY. Several years ago, discussions in this area were initiated with the RMI during our annual meetings and with the atoll leaderships as well. We were instrumental in getting many of these declassified documents made public. That's a continuing commitment from the Department of Energy. We continue to work with the RMI and the atoll leadership in that area.

Mrs. CHRISTENSEN. Thank you, Mr. Chairman. I see that my time is up, but I associate myself with the remarks of my colleagues. I feel that the RMI petition needs to be given more favorable consideration, and I'm not sure that all of the issues that need to be addressed, the effects of the testing are being addressed to the extent that they need to be.

The CHAIRMAN. Further questions? Ms. Watson.

Ms. WATSON. Thank you so much, Mr. Chairman, and I am sorry I was late. I hope that my statement and question were not already covered, but I am going to raise them anyway.

My colleague, Congressman Faleomavaega and I, in 2001, went to the Marshall Islands and attended a number of public hearings at which time residents of the Marshall Islands testified as to their medical problems related to the nuclear testing in the region, particularly BRAVO. And it was—I was profoundly moved by the long-term suffering of the people of the Marshall Islands because of our nuclear testing there for over two decades, and it included 67 atmospheric nuclear weapons tests on the Marshall Islands atoll, Bikini and Enewetak and so on. And number one, my concern was why would we pick these idyllic islands to experiment with our atomic bombs?

And some of the islands, as we flew over in a small plane with the Ambassador, were completely blown off the map. Many of the islands had lost their topsoil and some of the soil was still hot. The people that testified in front of the committees where we attended are talking about the generational effect. These were seniors who were talking about the effects of the nuclear fallout, not only on their children but their children's children, because as we understood, the nuclear waste went into the ocean and went into, I guess, the ocean floor and then into the fish and other parts of that environment. And so we were very compelled by their request.

Now, my question to you is, with the rejection of the RMI's claim to increase the amount of money, can you explain upon what basis—and that might have been what you were addressing when I walked in, so you might clarify that for me. Can you explain to me the rejection, why you felt maybe the RMI mishandled or was too liberal with addressing not only the physical but the health needs, but what really was compelling to me is that the housing needs—and I walked across those islands, which are nothing but desert—and the people were given little huts and they might have a television, and every young girl 13 or 14 was pregnant, nothing to do, no schools. They were just opening a hospital and a school when we were there.

So I would think because we destroyed a region with our testing, that we would want to be sure that the adequate funding was there for however long it takes to bring those islands back to a livable condition.

Now, can you explain to me upon what grounds was there a rejection of their proposal to increase the funding? Mr. Howard Krawitz, Acting Deputy Assistant Secretary for East Asian and Public Affairs, Department of State.

Mr. KRAWITZ. Pacific Affairs. I guess in part the answer is that again, as I said several times, the State Department didn't reject anything. The State Department merely compiled the findings of various technical agencies concerning the specifics of this specific petition. And the feeling was from the technical agencies and those who are experts in remediation and health care and that, and under the tenets of the law that Congress passed in 1986, the public law that created the Compact of Free Association with the Republic of the Marshall Islands, and the 177 Agreement which was incorporated in that, and the 177 Settlement Agreement, which comes out of that, that this particular petition didn't meet the conditions, it didn't meet the criteria.

As I said before, we did not attempt to describe the overall relationship or whether or not needs existed or whether or not other things should be done. We only addressed the specific thing.

However, in talking about that, we have noted that programs were set up, monies were spent, medical care was provided, and that a full settlement was reached in 1986 of both parties. The United States and the Republic of the Marshall Islands agreed upon, part of which was \$150 million trust fund or claims fund, and the provision to establish a tribunal to make decisions concerning awards and eligibility. The United States had no role in that tribunal. That was wholly staffed and all decisions and awards were wholly done by the Republic of the Marshall Islands Government.

That was considered a full settlement. And so part of the problem is—and even there there was a provision left, there was a piece left in Article IX of Section 177 that said, as we stated out, the five conditions. Should these things surface and meet the test, then you have the right to ask Congress for additional compensation.

This is the basis upon which we have made this decision we're talking about today. Again, we're not denying any money or anything. We're just making a judgment on we were asked our opinion,

this is our opinion. The Congress doesn't necessarily have to follow our opinion, my understanding.

Ms. WATSON. If I may just follow up—

The CHAIRMAN. The gentlelady's time has expired.

Ms. WATSON. Could I get one half a minute from someone?

The CHAIRMAN. If you ask the question quick, I will let him answer.

Ms. WATSON. All right. It says "the Administration's rejection of the claims," and what I saw at the tribunal meetings were that there is a second generation effect and a third generation effect, meaning that it is going to require additional funds to address the needs of those people that are impacted from other generations because of the testing. I don't know—it just says the Administration's rejection, so is that the Department of State, Energy and Defense coming together? I don't know who rejects those claims. Anyone on the panel that can respond.

Thank you, Mr. Chairman.

The CHAIRMAN. Can anyone answer that question?

Mr. KRAWITZ. By default, I guess. It's not a question of—we don't reject claims. We reject—let me put it this way. The Office of Management and Budget, OMB, was the final clearinghouse of this. We did this on behalf of the Administration. I understand that in addition to the Energy Department, the Interior Department, the Health and Human Services Department, I mean there was a whole host of folks who have been involved in programs in the Marshall Islands that were part of this.

What we're saying is only for this specific petition, this specific request that was placed in front of Congress under the provision allowed in Article IX, we were asked our opinion on whether or not the claims made by the Republic of the Marshall Islands Government met the standards set in Article IX for a request for additional compensation. In the Administration's view the answer is no, but that's the Administration's view. We were asked to make a judgment about whether this was a legitimate—these were legitimate claims under the conditions set forth, and the evaluation of the Administration was they do not meet the criteria.

Ms. WATSON. I want to thank the Chair. I know my time is up. I will try to raise these questions with other panels too. Thank you.

The CHAIRMAN. Mr. Udall.

Mr. TOM UDALL. Thank you, Mr. Chairman. I appreciate you joining with the IR Committee holding these very important hearings.

Apparently, the United States maintains that injuries related to fallout could only occur if a population was within an area restricted to the four northern atolls, and that injuries occurring in atolls south of the northern atolls cannot be attributed to fallout. But if you look at this NCI, National Cancer Institute, report that was prepared for the Senate Committee on Energy and Natural Resources in September 2004, it seems to dispute this position in its findings that 227 excess cancers will occur within the population that resided in the other atolls. So we are talking about other atolls, which in this report show a population of about 2,000 getting over 10 percent excess cancers. Does the Administration support the findings of the National Cancer Institute? He has made

his findings. I want to know whether the Administration, whether the two Administration witnesses—

Mr. KRAWITZ. I am only one part of the Administration here.

Mr. TOM UDALL. Well, you have another part there. I am going to go to him next.

[Laughter.]

Mr. KRAWITZ. I can't answer your question. I can only say that there were studies done. A report was compiled. A lot of folks had a hand in it. This was the—well, I guess my answer is yes. I mean we support—

Mr. TOM UDALL. Yes. That is good, that is a good answer, OK. Do you support them, those findings of the NCI?

Mr. CARY. His testimony today?

Mr. TOM UDALL. Well, this report here. The testimony is I believe he will—the chart on Table 3 here on page 20 of this report indicates that the NCI found excess cancers, 227 excess cancers. Do you support that, the witness from the Department of Health, Health and Human Services? Department of Energy, excuse me, Department of Energy.

Mr. CARY. Paraphrasing the testimony of my colleague, that is the upper end of the envelope of an estimation of illness.

Mr. TOM UDALL. So we are talking about a much wider pattern of exposure in excess cancers. Is that correct, to the witness from the NCI?

Dr. BOUVILLE. Yeah, that's undoubtedly correct. It is true that the population of the four exposed atolls that DOE is considering, we see much higher exposures than the other northern atolls. But our estimates are even though the exposures were lower in the other atolls, there were exposures, and on that basis we estimated a number of health effects that corresponded to those exposures.

Mr. TOM UDALL. So when we talk about changed circumstances, my understanding is that the agreement, this part of the 177 Agreement, could not reasonably have been identified as of the effective date of the agreement. I don't see any way where as of the effective date of the agreement these excess cancers could have been identified. I mean we are only having NCI weigh in at a very recent time in terms of these excess cancers.

Yes, sir, go ahead.

Mr. KRAWITZ. I'm afraid, I'm going to have to say that I might have just misspoken. I was under the assumption you were talking about the report that the Administration handed in, not specifically that. We haven't had a chance to review yet. Our scientists would have to look at it, so I can't answer one way or the other for that report.

Mr. TOM UDALL. So you are retracting your "yes" you gave me earlier.

Mr. KRAWITZ. Yes. Well, I keep the yes for this, all right, if it's the Administration's report, but we haven't had a chance to read that one actually yet. So if that's what you were asking about, then I was wrong.

Mr. TOM UDALL. I was asking specifically about the excess cancers on the other atolls.

Mr. ABERCROMBIE. Would the gentleman yield a moment?

Mr. TOM UDALL. Well, I would like to get an answer out of these gentlemen.

Mr. ABERCROMBIE. This may help you get that if you can yield to me 10 seconds.

Mr. KRAWITZ. The answer is no, I can't comment on that because—

Mr. ABERCROMBIE. But you have commented.

Mr. TOM UDALL. I will yield to my good friend here, go ahead.

Mr. ABERCROMBIE. The problem, Mr. Krawitz, is that you have commented on it. On page 4 you state without equivocation, "The vast majority of scientific evidence, however, documents that the elevated levels of radiation are limited to the most northerly atolls and islands, and that even many historically inhabited northern islands can be resettled under specific conditions." You state without equivocation that the vast majority of scientific evidence says that it's limited to the northern atolls.

Mr. KRAWITZ. And that comment comes from our discussion of this report which was submitted with clearance from all the agencies that were involved. And so I stand by that comment as it pertains to this report which we submitted to the Congress.

Mr. ABERCROMBIE. Yes, but you should have been examining whether or not it meant the changed circumstances. There have been reports since then which Mr. Udall is now citing to you that indicates something else. And if you read the report that Dr. Bouville himself indicates in his testimony, the scientific evidence that is being stated for radiation and the extent of the radiation is measured against a cohort that has to do with native Hawaiians, for crying out loud, and there has never been a scientific survey of the extent of radiation in the Marshalls.

Mr. KRAWITZ. But I can only speak, sir, to what—

Mr. ABERCROMBIE. I know you can. That is why you should have been more circumspect with regard to whether or not the criteria for changed circumstances were met.

Mr. KRAWITZ. But that's to this petition, and this is post-petition.

The CHAIRMAN. The gentleman's time has expired.

Mr. TOM UDALL. Mr. Chairman, could I just have a second here to wrap this up?

The CHAIRMAN. OK.

Mr. TOM UDALL. The point here is that it is absolutely clear that this is much more extensive, and so you can technically take a stand on what is before you, but if they amended their submission, it is clear that there is a lot that could be put into the submission.

With that, I appreciate the Chairman's generosity.

The CHAIRMAN. Any further questions? Ms. Bordallo.

Ms. BORDALLO. Thank you very, very much, Mr. Chairman.

I want to just follow up for the record. Congresswoman Watson mentioned she wondered why we would have selected a beautiful group of islands in the Pacific for this testing. Well, I am going to add to that, inhabited islands. That, for the life of me, I will never be able to understand.

I have another question for you, Mr. Secretary. In Compact I under the Section 177 Agreement, a nuclear settlement of \$150 million was provided to the RMI for damages resulting from the U.S. nuclear testing. In addition, the U.S. has also provided ex

gratia payments estimated in excess of \$200 million. My question to you—and I hope you are going to be able to answer this—the Administration's position is clear that there is not legal basis to provide additional compensation to the RMI under the 177 Agreement. Do you agree with that?

Mr. KRAWITZ. Yes, ma'am, we do.

Ms. BORDALLO. However, if Congress were considering additional assistance on an ex gratia, would we expect opposition from the Administration?

Mr. KRAWITZ. You're going to hate my answer, Congresswoman. We don't have a position on that because it's not what we were asked to address today.

Ms. BORDALLO. Let me ask you, Mr. Secretary, what would be your personal opinion?

[Laughter.]

Mr. KRAWITZ. I've been waiting all afternoon for that question to come up. And here's the problem, I can't have a personal opinion because you're not asking Howard M. Krawitz, you're asking somebody who's a representative of the State Department, speaking under oath on a very specific issue. But when I'm not on oath anymore and we have a private moment, I will be glad to tell you my personal opinion.

Ms. BORDALLO. Well, I am looking forward to that private moment.

[Laughter.]

Ms. BORDALLO. Thank you.

The CHAIRMAN. Seeing no further questions, I am going to let this panel go. I want to thank you. I know this has been a long panel, but the members obviously have a lot of questions and a lot of concerns, and I thank you for doing the best you can in answering all of their questions.

So I am going to excuse this panel.

The CHAIRMAN. Panel II consists of a group of individuals representing the people of the RMI. Both of our witnesses have flown thousands of miles to be with us today, which a few members here today can appreciate.

Mr. ABERCROMBIE. Mr. Chairman?

The CHAIRMAN. Yes?

Mr. ABERCROMBIE. While the panel is being seated, could I ask your permission to submit for the record some written statements, including handwritten statements that I will try to get transcribed, from survivors in the Marshall Islands who requested that I submit the testimony on their behalf?

The CHAIRMAN. Without objection, it will be included in the record.

Mr. ABERCROMBIE. Thank you.

**[NOTE: The information submitted for the record has been retained in the Committee's official files.]**

Ms. BORDALLO. Mr. Chairman, I would also like to add to the record my statement.

The CHAIRMAN. Without objection, all members' statements will be included in the record.

[The prepared statement of Ms. Bordallo follows:]

**Statement of The Honorable Madeleine Z. Bordallo, a Delegate in Congress  
from Guam**

The issues surrounding the United States Testing of Nuclear Weapons in the Marshall Islands during the 1950s present to the Committees the opportunity today to exercise and fulfill essential jurisdictional and oversight responsibility. I am pleased that you, Chairman Pombo, and Chairman Leach, and Ranking Members Rahall and Faleomavaega, have worked together in a bipartisan fashion to ensure that these most serious matters resulting from the legacy of U.S. Nuclear Testing in the former Trust Territory of the Pacific Islands are merited full and complete, due and timely consideration by Congress. I too want to thank you for scheduling this joint hearing to examine the Changed Circumstances Petition and the Administration's views.

I believe this hearing is particularly important to further understanding the responsibilities that stem from the unique Compact relationship between the United States and the Republic of the Marshall Islands (RMI). Today is also important to our understanding of the international obligations that are derived from the decades of strategic partnership between our two nations.

I support the Republic of the Marshall Islands in their quest to re-examine the adequacy of the Section 177 agreement given the scientific advancements that have been made over the past twenty years and the resulting new information. The declassification of documents by the United States during the 1990s that provide information pertaining to the extent and scope of the 67 tests that were conducted between 1946 to 1958 by the U.S. on Bikini and Enewetak Atolls legitimizes this review. The new information should continue to be carefully evaluated and compared against the original intent of the Section 177 agreement.

For today's hearing, I believe it is important to examine the Changed Circumstances Petition in context, and to focus on the basis for the inclusion of the Changed Circumstances provision in the Section 177 agreement. What were the intentions of the parties in formulating the Section 177 agreement? What was the rationale invoked and accepted by Congress at the time of enactment for the inclusion of the changed circumstances provision? How important was the changed circumstances provision to successfully terminating the U.N. trusteeship and to transitioning to the Compact relationship? How critical was this provision towards reaching consensus in support of the United States national security interests in the Cold War era?

Despite the broad intentions to provide for a full and final settlement, the events of time and the progress of science, suggest that this issue remains unsettled, that this legacy continues and that our responsibility to address these issues remains. The Changed Circumstances Petition essentially in my opinion revolves around two central questions:

- (1) Could the extent of injuries to persons and damage to property as a result of U.S. nuclear tests on Bikini and Enewetak now known have been reasonably identified in 1986? and
- (2) Does the extent of injuries and damage, and the unpaid claims, render the agreement of 1986 "manifestly inadequate?"

Here I suspect we will find that we have many questions and differing opinions. The operative words "reasonably identified" and "manifestly inadequate" I suspect will largely drive these differing points of view. These differences should not be cause of obstructing our ability to continue to reach for the facts surrounding this legacy. They should not be used to slow our progress in working to improve the health and welfare of the Marshallese.

I want to state for the record my profound respect for Ambassador Banny deBrum and Minister Gerald Zackios, both of whom I again welcome to the committee today. In working together to appropriately and justly address the questions of United States responsibility, we renew the relevancy of our bilateral strategic military alliance. Thank you for your commitment to the Compact agreement and for your concern. Si Yu'os Ma'ase. Kommol tata.

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**The CHAIRMAN.** Before you gentlemen take a seat, if I could have you stand, we customarily swear in all witnesses before the Committee.

[Witnesses sworn.]

**The CHAIRMAN.** Thank you very much. Let the record show that they both answered in the affirmative.

I would like to first recognize Mr. Gerald Zackios, the Foreign Minister from the RMI. I again tell our witnesses that your oral statements are limited to 5 minutes. Your entire written statement will be included in the record.

Mr. Zackios, when you are ready, you can begin.

**STATEMENT OF THE HON. GERALD M. ZACKIOS, MINISTER OF FOREIGN AFFAIRS, GOVERNMENT OF THE REPUBLIC OF THE MARSHALL ISLANDS**

Mr. ZACKIOS. Before I begin, Mr. Chairman, I would like to ask permission for a Four Atoll statement to be printed in the record following my statement, and for the hearing record to remain open for the remaining period.

Chairman Pombo, Chairman Leach, distinguished Mmembers, I am accompanied here today by the Minister of Health, Alvin Jacklick, and representatives of the four atolls most affected by the U.S. nuclear weapons testing program, including Utrik's Michael Kabua, one of our traditional leaders, and other representatives.

On behalf of President Note and the RMI Government, I want to thank you for convening a hearing on the legacy of the U.S. testing program and the RMI's changed circumstances petition. Our bilateral relationship is perhaps the closest strategic alliance ever defined by a treaty between the U.S. and another nation. We have always stood with the United States in its wars on terror, the terror of the Soviet threat during the Cold War and today's war on terror, where our sons and daughters are serving side by side with U.S. troops in every branch of your armed services. Today U.S. military facilities in the RMI make your homeland, our islands and the entire world safer every day.

Two decades ago, Congress anticipated enduring problems for RMI as a result of the 67 nuclear weapons tests, including human hardship, uncompensated land damages and ongoing public health challenges that overwhelm our capabilities. Recognizing this solemn responsibility, your predecessors joined our leaders in an agreement that increased but did not end U.S. commitment.

The Section 177 agreement has been more comprehensive than prior measures, but remains piecemeal and incomplete.

Our radiation-related needs became more urgent when the National Cancer Institute recently predicted that hundreds of radiation-related cancers from throughout the Marshall Islands are expected in coming years. This is a changed circumstance. Consequently, the RMI Government asks for your continued assistance to, one, plan for health care monitoring and treatment of future cancer patients anticipated by the NCI; two, provide continued funding in Fiscal Year '06 and beyond for the 177 health care program with an inflation adjustment; three, address the health care needs of all populations exposed to significant levels of radiation in the Marshall Islands, an area broader than just the four atolls currently recognized by the U.S. Government as exposed to radiation; four, provide the Nuclear Claims Tribunal with the funding to pay for the personal injury and private property damage claims it has awarded; five, create a long-term stewardship plan for its nuclear waste storage facility on Runit Island, as the U.S. would be required to do domestically; and six, continue to declassify and pro-

vide the RMI documents pertaining to the U.S. nuclear weapons testing program.

Based on the standards for addressing similar radiation problems in the U.S. and pursuant to the Compact, the RMI is seeking additional assistance as provided by Congress in the Section 177 Agreement of the Compact. The RMI reluctantly, but in good faith, accommodated the U.S. proposed settlement in the original Compact negotiations, but only because the U.S. agreed in the 177 Agreement to work with the RMI, and I quote, "to create and maintain in perpetuity a means to address past, present and future consequences of the nuclear testing program including the resolution of resulting claims."

The term "full settlement" has been intentionally misconstrued in the State Department report to currently argue that the agreement was a simple payment of \$150 million to terminate Federal Court cases. However, that was not the intent of Congress or past administrations. The RMI would never have accepted the initial \$150 million payment as a full settlement. That amount was politically determined and not tied to any known or attempted estimate of actual damages. Rather, the RMI agreed to the settlement only because the U.S. agreed in the Section 177 Agreement to a "just and adequate" compensation in the settlement of all claims. The 177 Agreement included establishment of a tribunal to adjudicate all claims fully, and adequate health care for affected populations.

Our knowledge of the extent of injury to our people and damage to our lands has increased, due in part to new information released by the U.S. and expertise developed by the tribunal. The inadequacy of funds for both the tribunal and health care under the 177 Agreement has become more obvious. If tribunal awards cannot be paid as suggested by the State Department, then the alternative remedy is meaningless.

We believe that the report by the Congressional Research Services is a fair and objective summary and provides a useful starting point for addressing issues outlined in the CCP.

The RMI Government appreciates the assistance provided in the 177 Agreement to date, as well as all forms of ex gratia assistance. The RMI also appreciates the willingness of the Department of Energy to address many of our needs within the limited scope of its mandate.

Despite our best efforts, there are still gaping holes in the piecemeal approach. We urge Congress to address the gaping holes that are evident such as the substandard or nonexistent health care for communities exposed to significant radiation, grants that cannot be paid, and the inability of numerous people to return to their home islands more than 50 years after the BRAVO test.

As you have looked to the Marshall Islands to protect freedom and to win the Cold War, we look to you, Mr. Chairman, and the Congress to address the adverse consequences of the U.S. strategic achievement for the people and environment in the Marshall Islands.

Thank you very much.

[The prepared statement of Mr. Zackios follows:]

**Statement of The Honorable Gerald M. Zackios, Minister of Foreign Affairs,  
Government of the Republic of the Marshall Islands**

Chairman Pombo, Chairman Leach, Distinguished Members of the House Committee on Resources and the Subcommittee on Asia and Pacific of the House International Relations Committee:

I am accompanied here today by the Minister of Health, Alvin T. Jacklick, and the Senators and Mayors of the 4 atolls most affected by the U.S. Nuclear Weapons Testing Program.

On behalf of President Kessai H. Note and the Government of the Republic of the Marshall Islands (RMI), I want to thank this Committee and Subcommittee for conducting a hearing on the legacy of the U.S. nuclear weapons tests in the Marshall Islands and the RMI's Changed Circumstances Petition (CCP) (Map I). This hearing is one of many which Congress and the RMI have developed to establish a record of our efforts to address the full range of needs linked to the U.S. Nuclear Weapons Testing Program. Today I will focus my remarks on the RMI's specific requests in the CCP, issues of equity, and new information about the consequences of radiation exposure that compel all of us to update our understanding of the effects of the U.S. Nuclear Weapons Testing Program in the RMI. I will also explain the reasons why the RMI government strongly contests the findings of the U.S. State Department staff in its report regarding the CCP. But first let us consider the fundamental reason for our coming together today.

The Compact of Free Association is perhaps the closest strategic alliance ever defined by a treaty between the U.S. and another nation. We have always stood with the United States in its wars on terror—the terror of the Soviet threat during the Cold War, and today's war on terror where our sons and daughters are serving side-by-side with U.S. troops in every branch of your armed services. Today, U.S. military facilities in the RMI make your homeland, our islands and the entire world safer every day. No other nation in the world stands behind the U.S. more at the United Nations. We have a proud record of working hand-in-hand with the U.S. to deliver key votes in that world body.

The only reason we are meeting today is because of an enduring problem resulting from the U.S. Nuclear Weapons Testing Program. This problem—human suffering and land damages that remain uncompensated, along with ongoing public health challenges that overwhelm our capabilities—was actually anticipated by your committees nearly two decades ago. Recognizing the solemn responsibility to address the repercussions of America's nuclear weapons research, your predecessors joined with our leaders in efforts that over the past 19 years have been positive, but piecemeal, and ultimately inadequate given the enormity of the impact that continues to emerge—as radiation-related illnesses appear to this day in much higher quantities than otherwise would be the case.

As directed by Congress back in 1986, we are today presenting these circumstances—and our estimate of what is required to address them—in the form of a petition. But regardless of the form and legal framework in which they are presented, the reality is that we are seeking your continued partnership as we work to cope with these serious matters.

This sad fact was made all the more serious when the National Cancer Institute (NCI) verified last September that hundreds of radiation-related deaths from throughout the Marshall Islands are still expected in coming years. Consequently, the RMI government asks for your continued assistance to:

- address the healthcare needs of all populations exposed to significant levels of radiation in the Marshall Islands—an area broader than just the 4 atolls currently recognized by the U.S. government as exposed to radiation.
- provide the Nuclear Claims Tribunal with the funding it needs to provide compensation for the personal injury and private property damage claims it has awarded, as mandated by Congress in the Section 177 Agreement that is part of the Compact of Free Association between our two nations. If Congress determines the private property awards involve issues of fact or law that require further evaluation or adjudication are too large or complex for Congress to consider, the RMI government supports the referral of these claims to the U.S. courts in a manner prescribed by Congress to determine the merits of those awards. Until these claims are addressed as intended in the 177 Agreement, there can be no full settlement for the damages and injuries sustained in the RMI.
- create a long-term stewardship plan for its nuclear waste storage facility on Runit Island as it would be required to do in the United States.

Based on the standards for addressing similar radiation problems with American citizens, and pursuant to the Compact of Free Association, P.L. 99-239, the RMI is

seeking additional assistance as provided by Congress in the Section 177 Agreement of the Compact. The RMI government is open to working with Congress and the Administration to explore all avenues to address the needs of the people in the RMI affected by the detonation of 67 atomic and thermonuclear weapons within our boundaries during the time that the U.S. government was the sole legal authority governing our territory. We thank the U.S. Department of Energy for its willingness to address lingering needs to the best of its ability within the limited scope of its mandate from Congress as well as the ex gratia assistance extended by Congress from time-to-time. Despite these best efforts, however, there are still gaping needs linked to the U.S. Nuclear Weapons Testing Program in our homeland.

However, it is now apparent that neither the ratification of the Compact in 1986 nor the 20 year renewal of the Compact in 2003 has fully resolved the legacy of U.S. nuclear testing in our islands from 1946 to 1958. Instead, our governments must continue to meet our on-going commitments under the original nuclear claims settlement pursuant to Section 177 of the Compact, and other mutually agreed measures.

For our governments to make full and final resolution of the nuclear testing claims a part of the Compact success story, Congress must remember the obligations openly and affirmatively undertaken in the Section 177 Agreement in 1986.

When Congress approved the Compact, it insisted on retaining unprecedented and extraordinary jurisdiction over these claims under the changed circumstances provisions of Article IX of the Section 177 Agreement; the changed circumstances provisions are not a narrowly restricted and purely legalistic standard as argued by U.S. State Department staff in response to the RMI Changed Circumstances Petition. This unprecedented claims settlement was proposed by the U.S. to provide an alternative to litigation of these claims in the U.S. courts in order to avoid delay of U.S. strategic programs at Kwajalein Atoll at the height of the Cold War.

Between 1986 and the present, the Section 177 settlement has been substantially, but only partially, implemented. It has been a success in the sense that it terminated court cases and allowed the U.S. to carry out strategic programs in the RMI that helped end the Cold War. The RMI reluctantly, but in good faith, accommodated the U.S. bottom line in the Compact negotiations, but we did so only because the U.S. agreed in the Section 177 Agreement to work with the RMI, "...to create and maintain in perpetuity, a means to address past, present and future consequences of the nuclear testing program, including the resolution of resultant claims."

The term "full settlement" has been hijacked in the State Department staff report to argue that the Section 177 Agreement was a simple payment of \$150 million to terminate the federal court cases that were headed for a scheduled trial date in 1984—that was not the intent of Congress of the past administrations. The RMI would never have accepted the initial \$150 million payment as a full settlement. That amount was politically determined and not tied to any known or attempted estimate of actual damages. Rather, the RMI agreed to the settlement only because the U.S. agreed in Section 177 to "just and adequate" compensation in the settlement of all claims. The Section 177 Agreement included establishment of a Nuclear Claims Tribunal to adjudicate all claims fully, in order to ensure adequacy of compensation based on actual computation of damages through an alternative judicial process.

Our knowledge of the extent of injury to our people and damage to our lands has increased, due in part to new information released by the U.S. and expertise developed by the Tribunal. The inadequacy of the Section 177 compensation, including the trust fund for claims, and measures to address the health needs of our people has become more obvious. If Nuclear Claims Tribunal awards are allowed to become worthless, then the creation of the process will have been a hoax.

We believe that on balance the report by the Congressional Research Services is a much fairer and more objective summary, and provides a good starting point for addressing issues outlined in the CCP.

#### *History/Background:*

Most people in the world think about Hiroshima when they think about nuclear devastation. We can imagine the buildings that were leveled, and the incineration of all living things—images we associate with wartime. When people think about the Marshall Islands, however, they do not seem to conjure any sense of what nuclear weapons did to the country or the people. Yet, how many people in the United States are aware that the Marshall Islands experienced the equivalent of 1.6 Hiroshima-sized bombs every single day during the 12 years that the U.S. government detonated nuclear weapons in our country? In terms of radioactive iodine alone, 6.3 billion curies of iodine-131 was released to the atmosphere as a result of the nuclear testing in the Marshall Islands—an amount 42 times greater than the

150 million curies released by the atmospheric testing in Nevada, 150 times greater than the estimated 40 million curies released as a result of the Chernobyl nuclear accident, and 8,500 times greater than the 739,000 curies released from Atomic Energy Commission operations at Hanford, Washington (Graph I—comparison of radiation levels).

From 1946 to 1986, the U.S. Government exercised all powers and determined all functions of government in the Marshall Islands. With the exception of the brief period of military rule after liberation of the islands from Japan, from 1947 to 1986 the people of the Marshall Islands had only those legal, political and citizenship rights prescribed pursuant to U.S. federal law.

The United States government was the administrating authority for the people of the Marshall Islands from 1945-1986. As the colonial power, the U.S. government maintained tight control over all information about the activities that took place on our islands, particularly the top secret scientific data related to the nuclear weapon testing activities. This scientific data documented literally every impact of radiation and nuclear detonations on an island ecosystem and its people, but remained hidden from Congress, the U.S. public, and the Marshallese people for decades. When documents were declassified by the U.S. government in the early 1990's, information became available that was not known to the RMI government and its negotiators during discussions beginning in the late 1970s to terminate the trusteeship and to establish our Compact with the United States.

This is precisely the situation that Congress foresaw when it envisioned the CCP mechanism. Based on new information gathered from U.S. government documents, and scientific and medical advancements about radiological safety, clean-up, and the effects of radiation on health—information that was not previously known to the RMI government and its Compact negotiators—the RMI government submitted its Changed Circumstances Petition to you, the U.S. Congress.

*History of the U.S. nuclear weapons testing program in the RMI*

During World War II, the United States wrested control of the Marshall Islands from a brutal Japanese military regime, and the U.S. Navy became the administering authority for the Marshall Islands in 1945. In 1947, the United Nations placed the administration of the Marshall Islands with the United States government as the Marshall Islands became a part of the United Nations Trust Territory of the Pacific Islands (TTPI). From 1946-1958, the United States detonated 67 atomic and thermonuclear weapons in the Marshall Islands. The tests were designed to produce as much local fallout as possible both to allay international concerns about global fallout and to create a scientific laboratory in the Marshall Islands where U.S. government researchers could study the effects of radiation on the oceans and lagoons, the land, and the Marshallese people.

Of this arsenal of 67 weapons, 18 of the detonations were in the megaton range. The largest of all the tests was the Bravo detonation of March 1, 1954. Bravo turned out to be the largest nuclear weapon ever detonated by the United States government. The fifteen-megaton test created a mushroom cloud 25 miles in diameter. The force from the weapon pulverized coral, coconut trees and any objects in its path, and the unleashed energy gathered debris into the mushroom cloud where it mixed with radioactive materials. When the force of the weapon subsided and the cloud's materials fell to the ground—what we refer to as radioactive fallout—it coated the seas, islands, food crops, water catchments, houses, animals, and people.

Marshallese encounters with the bombs did not end with the detonations themselves. U.S. government documents released in the 1990s show us that the U.S. government exposed Marshallese citizens to radiation from nuclear weapons to study the effects of radiation on human beings so the U.S. would better understand the impacts of a nuclear war on U.S. soil, or the effects of radiation on its troops if an enemy detonated a nuclear weapon during combat. For one series of tests prior to Operation Castle in 1954, the U.S. government evacuated inhabited communities downwind from the ground-zero locations as a precaution, communities living on Rongelap, Ailinginae, Rongerik, Wotho, and Enewetak. When the U.S. detonated its largest thermonuclear weapon, Bravo, however, it decided not to evacuate communities directly downwind from the proving ground and redrew its maps of the evacuation area to exclude the inhabited islands of Rongelap.

U.S. personnel did not return to evacuate the Rongelapese until more than two days after they knew that radiation had coated the islands. After evacuation, the U.S. placed the “exposed” people of Rongelap and the community of Utrik into a secret medical study, called Project 4.1, to understand the effects of radiation on human beings. A notation for this study appeared in a 1953 document planning the scientific tests in conjunction with the Bravo test the next year (Joint Task Force 7, 1953). The U.S. government also chose a “control” population as part of its

study—people who were later injected with or told to drink radioactive substances for comparative study purposes (Advisory Committee on Human Radiation Experiments 1995). Groups of people, such as the Ailuk community, were not evacuated after the Bravo event (although they were exposed to levels of radiation sufficient to warrant evacuation) because the atoll's population of 401 people at the time was considered too large and cumbersome to evacuate. The people of Ailuk, Likiep and other neighboring atolls that received high doses of radiation remained in their radiation-laced environments without medical attention or efforts to reduce exposure to radiation.

*The current Administration position*

As noted in its report to Congress in response to the RMI's CCP, the State Department feels that there are no changed circumstances, that radiation remains limited to just four inhabited atolls in the Marshall Islands (as outlined in the DOE survey of 1978), and that the \$150 million provided in 1986 as a downpayment for damages and injuries for the testing program represents a full settlement. The RMI government strongly disagrees with these conclusions by the State Department. Specifically, we believe that:

- more damages and injuries occurred than have been recognized by the U.S. government;
- understandings about radiation affects, clean-up and public safety have advanced dramatically, resulting in the need to update U.S. policy toward radiation exposure in the RMI, and;
- the 177 Agreement is only a full settlement once all of the intents of the Agreement have been achieved.

As stated earlier, several intentions of the 177 Agreement have not come to fruition and once again require the attention of Congress.

Earlier this year, President Note outlined some of the RMI's major points of contention with the State Department report, including the following:

1. **Tribunal.** The State Department assertion that the Nuclear Claims Tribunal (NCT) established under U.S. Public Law 99-239 exceeded its scope of work by compensating illnesses not recognized by the U.S. Radiation Exposure Compensation Act (RECA) is misleading. For example, radiation sickness and beta burns that are not a factor for U.S. testing victims were compensated by the NCT. Similarly, the assertion by departmental staff that the extent of damage to private property (including clean-up costs) could have been known at the time the Compact was negotiated is easily disproved based on changing safety and environmental standards, as well as actual experience with clean-up costs in both U.S. domestic and RMI radiologically contaminated sites. The RMI recognizes that the proceedings of the Tribunal involved difficult and contentious issues, similar to adversarial litigation in U.S. courts. However, the independent assessment of the Nuclear Claims Tribunal's record and proceedings made by former U.S. Attorney General Richard Thornburgh in 2003 confirmed that the Tribunal adhered to American standards of jurisprudence, and concluded that the funds available to compensate for private property damage and loss, and personal injury were "manifestly inadequate." I would like to enter the Thornburgh report to be included as part of the hearing record.

2. **Exposure Levels.** Congress should not accept the assertion that only the 4 atolls were subjected to high levels of radiation exposure. The Breslin-Cassidy Report of 1955 (cited in the State Department report, but only in reference to Rongelap) shows that many atolls and islands within the Marshall Islands were exposed to high levels of radioactive fallout and contamination well beyond safe levels (Graph II—1955 doses for the mid-range atolls from the Castle series). The Breslin-Cassidy Report, among others, was classified at the time the Section 177 Agreement was concluded, and only became available in 1994. This is a changed circumstance.

Furthermore, at the time of the 177 Agreement, the acceptable dose limit for a member of the public was 500 mrem per year. The current dose limit and clean-up criteria specified by the U.S. Environmental Protection Agency (EPA) and adopted by the Nuclear Claims Tribunal is 15 mrem per year. This reduction in acceptable exposure levels is a changed circumstance. Similarly, the current U.S. EPA standard for radiological safety needs to be compared to the present U.S. position pertaining to the RMI which remains affixed to the standards of a 1978 DOE survey of the 14 northern-most atolls in the RMI. That survey, and other information, served as the basis for determining which areas and populations were exposed to excessive amounts of radiation in the RMI, thus warranting U.S. government assistance per the Compact. When applying the U.S. EPA's 15 mrem standard of maximum acceptable exposure to the 1978 survey information that is the basis of the 177 Agreement, U.S. government data clearly reveals that residents of the following

atolls were expected to be exposed over a three month period to levels of radiation far in excess of the 15 mrem annual standard (Graph III—1978 DOE doses):

Rongelap—400 mrems per year  
 Ailinginae—270 mrems per year  
 Mejit—100 mrems per year  
 Ailuk—90 mrems per year  
 Utirik—75 mrems per year  
 Likiep—75 mrems per year  
 Jemo—50 mrems per year  
 Wotho—30 mrems per year  
 Ujelang—20 mrems per year

It should also be noted that of the above listed atolls, only Rongelap, Ailinginae, and Utirik have been eligible for DOE medical or environmental monitoring programs. Graph III compares DOE doses for mid-range atolls to the current U.S. standard of 15 mrem. We believe that the healthcare needs of the mid-range atolls should be reconsidered based on DOE's own data. This 1978 survey provides data for just the 14 northern-most atolls and does not include dose estimates for other inhabited atolls, particularly inhabited areas in close proximity to those listed above. Furthermore, the survey only provides dose estimates for 1978 and does not address the issue of exposure levels on inhabited atolls that were even higher prior to 1978, particularly in the 1950s when all 18 of the megaton tests occurred and people resided on these islands. A 1955 U.S. government document that tallies the cumulative exposures from all 6 tests in the Castle series, including Bravo, lists the exposure levels for some of the same atolls listed above (Breslin and Cassidy 1955), including:

Rongelap—202,000 mrems  
 Ailinginae—67,000 mrems  
 Ailuk—6,140 mrems  
 Utirik—24,000 mrems  
 Likiep—2,196 mrems  
 Jemo—1,978 mrems  
 Wotho—784 mrems

These exposure levels would certainly be higher if the remaining 61 tests were factored in. It should also be noted that an atoll-specific approach to radiation exposure, as instigated by the 1978 survey, fails to consider the exposure levels of Marshallese laborers who worked for DOE on Bikini and Enewetak to assist with the clean-up efforts of the ground zero locations. In addition to not being eligible for U.S. funded healthcare, these workers are not eligible for any U.S. government programs to monitor their health, and were recently deemed ineligible to participate in a U.S. Department of Labor (DOL) compensation program for DOE workers exposed to radiation because they are not U.S. citizens—despite the fact that they were citizens of the U.S. trust territory when they were employed as DOE contractors. In comparison, American citizens who are eligible for this program receive \$150,000 in compensation plus future medical coverage, including doctor and hospital visits, medical treatments, diagnostic laboratory testing, prescription drugs, and other benefits.

The RMI government does not contest the scientific data gathered by DOE in 1978. However, it is essential that this data be reviewed, interpreted, and compared to updated knowledge about the effects of radiation and current U.S. standards for ensuring public safety.

3. Standards. Congress should reject the State Department's attempt to apply a less rigorous standard of environmental safety for the Marshall Islands than the U.S. Government applies to communities in the United States exposed to radiation, such as Yucca Mountain. In a press release dated June 6, 2001, Former EPA Administrator, Christie Whitman, calls the 15 mrem a year statement "very stringent public and health and environmental protection standards for Yucca Mountain." She went on to say:

These are strong standards and they should be. We designed them to ensure that people living near this potential repository will be protected—now and for future generations... They are designed to protect the residents closest to the repository at levels that are within the agency's acceptable risk range for environmental pollutants. This corresponds to a dose limit of no more than 15 millirem per year from all pathways.

In a country with just 70 square miles of land, private property is our most precious legacy and defines who we are as people—land provides the blueprint for our social and kinship networks and for our rights to cultivate resources. Landowners in the Marshall Islands require all the resources available to them to support their families. For the atolls contaminated with radiation, the question then becomes: to

what level should the atoll be cleaned to protect human health and the environment? How are we to compensate our citizens for one of the key building blocks of society—private property?

In the U.S., the EPA has answered that question employing clean-up standards that keep resulting risks of cancer incidence within range of 1 in a million, and 1 in 10,000. Such a clean-up standard is applicable to any residual contaminant, whether it is chemical or radionuclide. For example, the standard for clean-up after the attack on the World Trade Center was at the 1 in 10,000 risk range. With regard to radionuclides, the EPA has determined that the lower end of the risk range (1 in 10,000) translates into a clean-up level of approximately 15 mrem per year. This new standard is a changed circumstance.

4. Quantifying Compensation. Congress should not accept the State Department report's misleading inflation of U.S. Government assistance to communities affected by the U.S. Nuclear Weapons Testing Program. A great proportion of the expenditures noted by the State Department did not benefit the communities affected by the U.S. Nuclear Weapons Testing Program, but instead provided funding for the U.S. Government to conduct research into the effects of radiation on human beings and the environment. A significant portion of the amounts cited in the staff report were for public works projects and program activities of the U.S. Government for its own purposes and interest, and did not compensate individuals for injuries and loss of property. Historically, Congress has had to intervene to ensure that seizure of private property and injury or loss of life is fairly compensated, and that is precisely why Congress reserved the right for the RMI to seek further compensation, and for itself the authority and responsibility to determine if compensation provided to date is adequate.

5. Equity. Congress should question and critically evaluate the provocative suggestion that the RMI Government and the communities most affected by the U.S. Nuclear Weapons Testing Program have received excessive amounts of money. In fact, the RMI has received only a fraction of the amount the U.S. Government has spent on areas in the United States exposed to radiation during the Cold War (Map II—comparison of U.S. and RMI exposed areas).

6. Just Compensation. The U.S. government took private property belonging to Marshallese families for nuclear testing purposes. When private property is taken by the government, the landowners are entitled to just and adequate compensation. The U.S. recognized this constitutional requirement in Section 177 of the Compact in which it accepted responsibility for the just compensation owing for loss or damage to property resulting from its nuclear testing program. Although the State Department's staff report fails to recognize the just compensation obligation of the U.S. Government, the U.S. courts did not. The U.S. courts held that the U.S. not only accepted the obligation to provide just compensation but that such obligation was a constitutional requirement. The U.S. courts noted that the U.S. agreed that the Marshall Islands Nuclear Claims Tribunal was to determine whether the \$150 million provided by the U.S. pursuant to the Section 177 Agreement was just and adequate compensation. The Marshall Islands Nuclear Claims Tribunal, using well-established U.S. legal principles, determined that just compensation to the affected landowners was significantly in excess of the \$150 million provided pursuant to the 177 Agreement. The Congress, through the Changed Circumstances Petition process, has an opportunity to fulfill the obligation of the U.S. government by providing just and adequate compensation to the landowners (the Marshallese families) for the damages and loss of use suffered by them.

The funding of private property awards would permit the affected Marshallese to rid their land of radiological contamination, rehabilitate the soil, revegetate the land, resettle their home islands, and provide the means to establish a local economy in the fishing and tourism sectors. Thus, the funding would provide the resources which would permit them to once again become self-reliant.

7. Compact Negotiations. We object to the assertion that the RMI Government should have included radiation-related damages and injuries as part of its Compact negotiations with the United States. During the negotiations for the first Compact from 1978 through 1985 much of the information about damages and injuries was unknown, the knowledge of which today represents a changed circumstance. Furthermore, it is disingenuous to assert that the RMI should have sought funding for some of its CCP requests as part of the recently concluded Compact renewal discussions. During those discussions, the State Department made it clear to the RMI that nuclear and CCP issues would not be part of the Compact renewal negotiations because they were to be handled separately by Congress. Now, the Department of State is claiming that these matters should have been included in the original discussions. My government looks forward to the opportunity to provide Congress with the written record of State Department policy regarding these issues.

8. Full settlement. Perhaps the most misleading representation of all in the departmental staff report is the thematic suggestion that the nuclear claims settlement was a full settlement, and that this means no further compensation should be considered. Congress approved the full settlement under terms that expressly and explicitly included the right of claimants to seek further compensation through the "Changed Circumstances" process. Thus, Congress kept open both political and legal avenues for further redress of grievances and just compensation. Not only does the departmental staff report fail to faithfully reflect these principles of the settlement, the report fails to inform Congress that the U.S. federal courts that dismissed pending court cases involving these claims expressly left the door open to further proceedings in the event that compensation under the settlement proved inadequate by U.S. standards of justice. This omission and others require a more thorough analysis of the CCP and awards of the Tribunal in order for Congress to determine what additional measures may be necessary to fulfill the terms of the settlement of nuclear claims approved by Congress in 1986 under U.S. Public law 99-239.

Since the U.S. Nuclear Weapons Testing Program was conducted at a time when the U.S. governed the Marshall Islands and its people with the same authorities extended to the United States itself, we believe the same standards of care, safety, redress of grievances and justice that Congress has adopted with respect to the effects of nuclear testing in the U.S. mainland should be honored for the Marshallese people. In particular, we believe there should be equity in terms of healthcare availability and standards, environmental clean-up, radiation protection standards for the public, and compensation.

Without question, the cost of addressing radiological damages and injuries is expensive. The price tag for the requests made by the RMI government is high, but they are based on the level of care, protection and compensation that U.S. citizens receive for similar circumstances. Put another way, there was nuclear weapons testing in the United States and there was nuclear weapons testing in the Marshall Islands, but there is great disparity between remediation measures for Marshallese citizens compared to U.S. citizens. The RMI is not asking for special treatment or to make its people wealthy with compensation money, it is only asking for fairness. The U.S. government conducted its nuclear weapons testing program in the Marshall Islands because it recognized the hazards of these activities for its own citizens and ecosystems. It seems only fair that the Marshall Islands receive equity in terms of U.S. response.

All people who were exposed to levels of radiation above the current U.S. standard for public safety, 15 mrem, or whose health is adversely affected by the nuclear weapon tests should be granted access to the best available U.S. standard of primary, secondary, and tertiary health care services, including specialty care for radiogenic illness and medical monitoring. This model is consistent with a program mandate from the U.S. Congress in 1980 [P.L. 96-205, Sec 106 (a)], which specified "...a program of medical care and treatment...for any injury, illness, or condition which may be the result directly or indirectly of such nuclear weapons testing program."

To put the assistance provided to the RMI in contrast to that provided to American citizens, consider that the entire amount of the 177 Agreement, \$150 million for all past, present, and future damages and injuries related to the testing program, is the same amount of money made available to the State of Pennsylvania for public education after the Three-Mile Island incident—an incident resulting in no known loss of life or future health risks to the adjacent community.

*a. Equity in healthcare*

Downwinders and DOE workers exposed to radiation in the United States receive a high standard of healthcare for their radiation exposure—a level that greatly surpasses the healthcare available to Marshallese citizens exposed to radiation. The United States government has taken responsibility for the deleterious health consequences of the U.S. Nuclear Weapons Testing Program in the Marshall Islands in the 177 Agreement. However, the impact of the testing program on the health and well-being of the Marshallese people far exceeds the present capacity and provisions of the Compact. Current programs, which are designed to care for radiogenic illnesses and the health consequences of nuclear weapons testing, are limited in scope and resources. The 177 Agreement envisioned adequate health care for patients exposed to radiation. The gross inadequacy of current programs to address the adverse health consequences of the U.S. nuclear weapons testing program represents a changed circumstance.

Medical care is part of the comprehensive package owed to the people of the RMI as part of their nuclear compensation. The higher costs associated with health care, medical surveillance, and radiological monitoring of Marshallese citizens affected by

the U.S. Nuclear Weapons Testing Program could not reasonably have been identified at the time of the 177 Agreement and constitutes a changed circumstance. Future planning and funding must develop and sustain the RMI healthcare system's efforts to deliver comprehensive and culturally tailored health care services to the affected populations, as envisioned in the Preamble of the 177 Agreement.

The 177 HCP program has always been grossly under-funded and unable to deliver an appropriate level of health care as anticipated in the Compact. Provision of tertiary care services (off island health care that cannot be provided in the RMI) has not been available for 7 to 10 months out of each year. Secondary health care (inpatient and hospital-based healthcare) has been delegated to the RMI hospital system, which is not equipped to provide the appropriate level of inpatient care for the 177 population. Hence, the individuals in the 177 HCP have been subjected to a substandard level of primary, secondary and tertiary healthcare services since the program's inception. With less than \$12 per patient per month, this is the only healthcare available to Tribunal awardees with radiological illnesses and the vast majority of the 4 atoll population.

If done properly, cancer care, in particular, is very expensive to manage as it requires specialized doctors, screening and registries, pain control management, diagnosis and an array of treatments such as chemotherapy, surgery, radiation therapy and immunology. Cancer cases are often diagnosed at very late stages in the RMI because of a lack of basic screening and treatment elements. The RMI has no cancer registry, no oncologist, no capacity for specialized oncological surgery, no chemotherapy, no pathologist until last year, and no regular funds for cancer referral. In short, no health infrastructure has ever been built to address cancer, thyroid, or other radiation-related illnesses in the Marshall Islands.

The obligation to provide medical care for the adverse consequences of the U.S. Nuclear Weapons Testing Program cannot be met without comprehensive medical monitoring of populations previously exposed to ionizing radiation. A lack of medical monitoring has precluded the opportunity for early diagnosis and treatment of cancer and other radiogenic illnesses. Failure to detect and treat cancers and other radiogenic illnesses in their early stages results in more pain and suffering for the patient, and a larger cost of care for the healthcare institutions.

This is particularly important for us to consider given the 2004 report by the National Cancer Institute predicting that more than half of the cancers resulting from the U.S. Nuclear Weapons Testing Program have yet to develop or be diagnosed, including 40% of our thyroid cancers resulting from radiation exposure. The hundreds of people still expected to contract cancer exceed the populations of the 4 atolls defined by Congress as the area exposed to radiation and hence eligible for U.S. government assistance. This constitutes a changed circumstance.

I also want to note that some people suggest that the future cancer burdens do not justify further U.S. action as the Tribunal has already made personal injury awards outside the 4 atolls and to a higher number than the anticipated future burden. My response to this is that the presumptive formula used by the Tribunal is based on similar types of compensatory programs created by Congress. More importantly, the RMI is concerned about the healthcare needs of these people. The Tribunal provides a portion of awards for some cancers; my hope is to improve the RMI's medical surveillance capacity so we can provide early diagnosis and better care to these future cancer patients.

*b. Equity in clean-up*

While communities downwind from the Nevada test site and DOE workers provide a comparison for personal injury disparities between the U.S. and the RMI, clean-up activities at Hanford, Washington provide a similar comparison for restoration of contaminated lands in the U.S. and the RMI. Again, for comparative purposes, 8,500 times more radioactive iodine was released in the RMI than at Hanford.

In response to the environmental contamination caused by Hanford, the U.S. government appropriates \$2 billion and employs approximately 11,000 workers annually to assist with the clean-up. From the FY05 budget, the Department of Energy is estimating a total life cycle cost of \$56 billion and a completion date in 2035. Due to the manifest inadequacy of Tribunal funding, the Tribunal does not have the means to fund the private property damage awards it has made. To date, the Tribunal has paid approximately \$4 million to Enewetak and Bikini for their property damage awards totaling \$1.1 billion (\$454 million and \$629 million respectively), or just over 50% of an annual clean-up appropriation to Hanford. Again, the RMI government believes that Marshallese citizens have a right to the same clean-up standard as the U.S. maintains for its own citizens. The goal for clean-up at Hanford is 15 mrem, yet the U.S. government maintains that the RMI should settle for the less

rigorous international or outdated standard, despite the fact that Marshallese citizens were wards of the U.S. government when their exposure to radiation occurred.

*c. Equity in radiation protection standards*

The RMI government requests the same level of radiation protection the U.S. EPA currently applies, and particularly its focus on protecting the maximum exposed person since this approach ensures the protection of everyone. The protection to the Marshallese who live on their land and are dependent on its resources is no less important than the protection of the U.S. public who may reside near Yucca Mountain, for example. Each group is entitled to the same level of protection which means the application of the same 15 mrem per year safety standard.

*d. Equity in compensation*

For purposes of comparison, the disparities between the personal injury programs for the RMI and Downwinders in the U.S. are clear. The total weapons yield for the RMI was 108,496 kilotons, approximately 100 times greater than the 1,096 kilotons detonated in Nevada. The Tribunal has made awards for \$87 million dollars in personal injuries with a shortfall of \$15.5 million due to an inadequacy of funds. In comparison, Downwinders have received \$366 million for personal injury awards as part of the Radiation Exposure Compensation Act (RECA) and Congress has made supplemental appropriations when additional funds were needed. RECA requires the Attorney General to ensure that a claim is paid within 6 weeks of approval. In the RMI, 45% of claimants have died without receiving their full claims because of the pro-rationing requirement.

The geographic area defined by Congress as exposed to radiation from the Nevada tests and eligible to participate in the Downwinders program is significantly larger than the area Congress recognizes as exposed in the Marshall Islands. Although the total yields in Nevada were 1/100th the yields of the Marshall Islands, the exposed area in the Marshall Islands is limited to just 4 atolls. A map that superimposes the entire Marshall Islands over the U.S. Downwinders affected area underscores the discrepancies in geographic areas considered exposed (Map II). In April 2005, the National Academy of Science (NAS) recommended expanding eligibility for the Downwinders beyond its current geographic boundaries, and called on Congress to move quickly to provide assistance to Downwinders suffering from radiogenic conditions. In addition to ensuring that the measures taken under Section 177 of the Compact be sustained to guarantee that RMI citizens receive the same level of justice as U.S. citizens affected by the mainland tests, if the criteria for defining the universe of affected people and lands in the U.S. changes, the same criteria should be applied in the RMI.

*Conclusion*

In conclusion, Chairmen, Members, Ladies and Gentlemen, we are sitting here talking about numbers, policies, and science, yet for all of us in the Marshall Islands, the U.S. Nuclear Weapons Testing Program is a profoundly human experience—we experience the broad-reaching effects of the testing program on the most intimate and personal levels: from our home islands that we can no longer inhabit, to the sickness and death of our friends and family.

Again, to put this into human terms, the National Cancer Institute estimates hundreds of cancers related to the U.S. Nuclear Weapons Testing Program have yet to appear. This means that hundreds more of the people who we talk to, sleep next to, eat with, love, and work with will endure tremendous physical hardships and possible death. We can do our best to prepare our health system to deal with this burden, but we can never remedy the human and emotional toll that this takes on us as individuals, families, communities and a nation. A member of my staff recently received an email from a member of the Rongelap community expressing these sentiments:

The very first time I heard about a person dying of cancer was a friend of mine who was born on Wotje and grew up on Ebeye named Mrs. Darlene Keju-Johnson. Ever since then, so many people whom I loved and knew died of cancer.

Last November, I went to Ebeye on Kwajalein Atoll for a Rongelap funeral. One of the deceased was my brother-in-law, a member of the control group, but when I got to the burial I saw that there were many, many people and another coffin. The other one was a young girl who grew up on Ebeye and was ready to graduate from 12th grade. She died of cancer of the brain. Man, I just cried!

In December, I went back to the same burial place on Ebeye, two people have died, one was my aunt who was a DOE control subject and one was a Bravo survivor who died of cancer and God knows what else for we will

never know because we don't have the facility, equipment, doctors or medicine.

August before, my uncle, a Bravo survivor, died of numerous cancers as well as his wife. Most of their children were affected by radiation; the eldest son was the first one to go at 18 years of age and the living ones are just struggling to hold on, and the grandchildren are sick, too. My aunt died of breast cancer and my uncle died of lung cancer and my father died of cancer.

Today as we speak, a niece of mine is in intensive care diagnosed with cancer who won't be alive for long as I was informed and the list go on and on.

It has been over 50 years since history linked our two great nations. We have stood together in times of peace and times of conflict. At the conclusion of World War II, President Truman told the U.S. people that America was now "the most powerful nation in the world—the most powerful nation, perhaps, in all history." He went on to say that "a society of self-governing men is more powerful, more enduring, more creative than any kind of society, however disciplined, however centralized." We look to Congress to tap into the creative talents of your great nation to help us address the lingering needs of your friends and allies who, as this Committee's own resolution notes:

Whereas the Bravo test and the 12 year nuclear testing program has been the defining experience of the modern era for the people of the Marshall Islands, and these momentous events created a common bond between the people of the Marshall Islands and the United States military and civilian personnel who shared hardships and suffering with the people of the Marshall Islands during the testing program, as well as the United States citizens in areas affected by the mainland testing programs and weapons production industry (H. Con. Res. 364).

Kommolata

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July 18, 2005

The Honorable Richard W. Pombo  
 Chairman  
 Committee on Resources  
 U.S. House of Representatives  
 Washington, D.C. 20515

Dear Chairman Pombo:

Thank you for your letter of June 28, 2005 asking me to clarify two issues related to the hearing you convened in May. Below are my responses to your questions. Please let me know if I can provide any additional information about these or other topics.

I am also sending you a copy of my statement to the Senate Energy and Natural Resources Committee as I view the Senate hearing as an opportunity to build on the solid record that you established during your hearing. I look forward to talking with you and your staff in the near future about working together to develop legislation that can address the radiological needs in the RMI identified at your hearing.

WITH BEST REGARDS,  
 GERALD M. ZACKIOS  
 RMI MINISTER OF FOREIGN AFFAIRS

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**Question 1: Has the RMI Government ever formally approached past Administrations since 1986 regarding changes or concerns they had regarding radiological cleanup standards in their islands?**

Yes, every year since I can remember, the RMI has raised the subject of safety standards with the Department of Energy (DOE) at its annual meetings with the RMI. At these meetings, the RMI has repeatedly expressed concern about DOE's dividing of populations into groups of "exposed" versus "unexposed" as we have long disputed the U.S. government's assertions that only a very narrowly defined area of the Marshallese public is at risk because of radiation exposure.

In 1992, the U.S. government proposed a 100 mrem standard for environmental monitoring and clean-up on Rongelap Atoll. We accepted this standard at the time because it was proposed by the U.S. government, and because it was certainly a reduction from the 500 mrem standard that is the basis of the 1978 Survey that in-

forms the 177 Agreement. In 1996, no standard was included in the Rongelap Resettlement Agreement because we recognized that standards were changing and we couldn't come to agreement with the U.S. about the standard to apply. Clean-up for Rongelap's resettlement efforts are now based on 15 mrems because this is the policy of the Rongelap Local Government.

In 1998, the Nuclear Claims Tribunal adopted the U.S. EPA's clean-up standard of 15 mrem. Information about the adoption of this standard was included in Tribunal reports that the Executive Branch received, but never commented on. Private property damage claims before the Tribunal employing this standard were a matter of public record, and monitored closely by the U.S. State Department in Majuro, but again, there was no comment from the Executive Branch about the standard. DOE was also informed about the RMI's position regarding the lower standard; DOE always listened, but never commented on our presentations.

Two years after the adoption of the 15 mrem standard by the Tribunal, the RMI government submitted its Changed Circumstances Petition to Congress. The Clinton Administration declined to comment, and the Bush Administration responded 4 years later saying that it does not concur with the RMI's position regarding an environmental safety standard.

In my opinion, the RMI has repeatedly tried to engage the Executive Branch in discussions about environmental safety in the RMI, but never to any avail.

**Question 2: The NCI study of radiation-related illnesses mentioned the fact that exposure to fallout could result in a 9% increase in the total number of cancers expected, including a large increase seen in those who were very young during U.S. nuclear testing. Is the RMI Government planning the use of their Compact health funds to address the potential costs associated with this increase that may be attributable to nuclear testing?**

During the recent negotiations to extend economic assistance under the Compact of Free Association, the RMI attempted to present proposals to take into account problems resulting from the U.S. nuclear weapons testing program. However, the Executive Branch refused to discuss even limited aspect of the Changed Circumstances Petition. The results of the RMI's efforts in this respect are reflected in U.S. Compact Negotiator Al Short's letter to me dated March 27, 2002. The U.S. Compact negotiators would not discuss anything related to the consequences of the U.S. nuclear weapons testing program in the Marshall Islands, insisting instead that these matters would be taken up by Congress pursuant to the RMI's Changed Circumstances Petition. Consequently, provisions of Title Two of the Compact, as amended, and the Fiscal Procedures Agreement with respect to the Health Sector Grant make no mention of using these funds to address the increase in cancers and other illnesses attributable to nuclear testing.

During the hearing, U.S. Government witnesses testified that the RMI could allocate part of its Health Sector Grant to deal with the healthcare consequences of the Nuclear Testing Program. I was surprised to hear this in view of the U.S. position during the actual Compact negotiations. I would point out, moreover, that current healthcare funds available under the Compact are woefully inadequate to address the increased healthcare burdens resulting from the nuclear testing program. While we have increased funding for healthcare, including from the amended Compact of Free Association funding (and as represented in our medium term budget over the next few years and accompanying health sector portfolio which have been presented to the U.S. within the context of the U.S.-RMI Joint Economic Management and Financial Accountability Committee), these increased investments have gone to improve basic health care and certain priority preventative efforts. For instance, our healthcare budget has increased to about \$15 million in FY05—an increase of about 22 percent from previous years. This increased investment is because we have identified the health sector—along with education—as our priority sectors over the next several years. However, even with the amended Compact funding and expected increased investments of our own domestic revenues we will not be able to further increase funds because of our income constraints. We simply do not have the funds or expertise to respond effectively to the additional healthcare burdens related to nuclear testing.

If the RMI were to allocate funding from the Compact to address these costs, it would result in a significant decline in overall healthcare resources for the nation, such as in the areas of basic healthcare for children, neo-natal care. We would also have to reduce funding in our other priority areas such as education and the capital investments we are targeting to the education and health sectors. We wish we could increase investments on our own to provide these necessary healthcare services. However, given our own domestic revenue generation constraints and the decline of

the amended Compact sector grants, our health care funding will remain at about \$16 million annually over the next several years. As a comparison, the Commonwealth of the Northern Marianas is struggling with an annual health budget of \$45 million. While the populations of these two Pacific countries are similar with approximately 55,000 people each, the CNMI does not have radiological healthcare issues to contend with.

The bottom line is that the health care capacity of the Marshall Islands is already stretched. We are investing all that we can in healthcare in order to better serve our people. However, what resources we have are inadequate to meet the needs of those suffering from cancer and other illnesses attributable to the nuclear testing.

The CHAIRMAN. Thank you, sir.

And now I would like to recognize Judge James Plasman, representing the Nuclear Claims Tribunal.

**STATEMENT OF THE HON. JUDGE JAMES J. PLASMAN,  
CHAIRMAN, MARSHALL ISLANDS NUCLEAR CLAIMS TRIBUNAL**

Judge PLASMAN. Thank you, Mr. Chairman, Chairman Leach, distinguished Members.

The Nuclear Claims Tribunal was created pursuant to the Section 177 Agreement and was given the responsibility for determining all claims of the people of the Marshall Islands which are related to the nuclear testing program. The tribunal has dealt with property claims on a class action adjudicatory basis, hearing testimony from expert witnesses for claimants and for the defender of the fund. The four atolls have prepared a statement on these claims in the Congressional Research Service Report, and former Attorney General Thornburg's report likewise deals with these claims.

Personal injury claims have been addressed through an administrative structure based on U.S. programs designed to compensate radiation-related injuries to U.S. citizens. In consideration of its personal injury program the tribunal has had to deal with the evolving understanding of both the health effects of exposure to radiation and the extent of fallout in the Marshall Islands.

At the time of the Section 177 Agreement, the understanding of radiation-related health effects was represented in the 1980 report of the National Academy of Sciences Committee on the Biological Effects of Ionizing Radiation called BEIR III. The BEIR V report of that committee, issued in 1990, found cancer risks from radiation were 3 to 4 times higher than had been presented in the committee's 1980 report.

A 1982 Department of Energy report on the Effects of Radiation in the Marshall Islands estimated that in the 30 years following the report, two fatal cancers would result from radiation received in that time. Most recently, the 2004 NCI study estimated a radiation-related excess of 532 cancers among the 14,000 people living throughout the Marshall Islands during the testing period. Of these, it was estimated 289 will occur after 2003.

At the time of the agreement, knowledge of the effects of radiation on the thyroid gland were still developing. Over time it has been shown that the thyroid is significantly affected by radiation exposure, particularly by those radioactive iodines with short half lives.

In 1987, a thyroid expert from the National Institute of Health, in a presentation at an international conference noted, "The infor-

mation collected on the Marshallese people constitutes an important body of data relating to the late effects of radiation absorbed by the thyroid gland. It shows convincingly that the induction of thyroid nodules and thyroid cancer is a major cause of late morbidity."

Also in 1987, an article in the *Journal of the American Medical Association* documented a high prevalence of thyroid nodules in populations at 12 atolls that were thought not to have received significant fallout from BRAVO, and related this thyroid disease to radiation exposure from the tests.

This information indicated to the tribunal that there were significant exposures throughout the Marshall Islands beyond simply the four northern atolls.

This understanding was strengthened by the 1994 release of a previously classified 1955 report by the AEC that showed significant exposures throughout the Marshall Islands from the Castle test series. The 2004 NCI report estimate of 532 excess cancers included 297 from atolls other than the four atolls.

The tribunal, in establishing its personal injury program found guidance in relevant U.S. programs, the Atomic Veterans and Nevada Downwinders both are compensated under statutorily created programs which do not require proof of individual radiation doses but rely upon a presumption of causation if they develop defined radiogenic diseases. Even the recently adopted program for Department of Energy employees provides for a presumptive approach in the case of workers for whom there was inadequate information to develop a dose reconstruction and for whom there was a reasonable likelihood of harm.

In examining the Downwinders' compensation program, the tribunal found compelling comparisons to justify the presumptive approach in the Marshall Islands. Like the Downwinders, the Marshall Islanders were unknowing victims of the fallout of atomic testing. Like the Downwinders, the Marshall Islanders have insufficient information to reconstruct individual doses. Although the Marshall Islands is geographically somewhat larger than the area covered by the Downwinders program, the total yield of the nuclear test in the Marshall Islands was almost 100 times greater than that in Nevada.

The comparison of estimated doses for Downwinders and Marshall Islanders indicates that the atoll in the Marshall Islands with the lowest average dose was comparable to the average dose of the Downwinders who lived in the six counties closest to the Nevada test site.

Exposures during the testing program have had and will continue to have an impact on the health of the Marshallese people. The personal injury program adopted by the Nuclear Claims Tribunal is reasonable and based on U.S. precedent. The \$150 million Nuclear Claims Fund is almost exhausted. The U.S. nuclear legacy is an incomplete story as there remains significant past and future uncompensated damages that were not and could not be known at the time of the Section 177 Agreement and will not be addressed without additional consideration by the United States.

Thank you, Mr. Chairman.

[The prepared statement of Judge Plasman follows:]

**Statement of James H. Plasman, Chairman,  
Nuclear Claims Tribunal, Republic of the Marshall Islands**

**Jurisdiction of the Nuclear Claims Tribunal**

The Section 177 Agreement attempts to resolve the outstanding claims of the people of the Marshall Islands for damages resulting from the Nuclear Testing Program conducted by the U.S. in the Marshall Islands from 1946 to 1958. The Section 177 Agreement states that it is the full settlement of all claims of the people of the Marshall Islands arising out of the Nuclear Testing Program. At the same time, the agreement includes important elements that provide for an ongoing review of its terms to insure the interests of both parties are satisfied. Because there was not a full understanding of the consequences of the testing program at the time of the agreement, the parties agreed to the establishment of an independent body, the Nuclear Claims Tribunal, to assess and determine claims based on or arising out of the testing program. As mutually agreed between the Governments of the United States and the Marshall Islands, the jurisdiction of the Tribunal is "to render final determination upon all claims past, present and future, of the Government, citizens and nationals of the Marshall Islands which are based on, arise out of, or are in any way related to the Nuclear Testing Program..". Notably, this jurisdiction is not limited to claims from the northernmost atolls where the testing occurred, but covers "all claims".

In addition, as mutually agreed between the two governments, the Tribunal's jurisdiction is not artificially limited by an amount which the Tribunal may award in rendering "final determinations" of claims resulting from the Nuclear Testing Program. Article II, Section 6(c) provides for "\$45.75 million to be made available to the Claims Tribunal for whole or partial payment of monetary awards made by the Claims Tribunal pursuant to Article IV of this Agreement." Further, Article II, Section 7(c) provides that "Commencing on the fifteenth anniversary of the effective date of this Agreement, not less than 75 percent of Annual Proceeds shall be available for disbursement in whole or partial payment of monetary awards made by the Claims Tribunal in subsequent years." Clearly there is provision made for awards above and beyond the \$45.75 million, and further, there is no limitation on the amount which the Tribunal may award. The Tribunal's jurisdiction is to render final determination on all claims arising out of the testing program. It is not limited by any cap.

At the time the agreement was negotiated and came into effect, both the full effects of radiation on the health of the Marshallese people and the geographic extent of radioactive fallout and residual contamination were not understood. Much has been learned about the health consequences of radioactive fallout during the 22 years since the Section 177 Agreement became effective.

**The Effects and Levels of Radiation in the Marshall Islands**

The 177 Agreement states (in Article VIII) that:

"The Government of the United States has concluded that:

- (a) The Northern Marshall Islands Radiological Survey and related environmental studies conducted by the Government of the United States represent the best effort of that Government accurately to evaluate and describe radiological conditions in the Marshall Islands; and
- (b) The Northern Marshall Islands Radiological survey and related environmental studies have been made available to the Government of the Marshall Islands and can be used for the evaluation of the food chain and environment and estimating radiation-related health consequences of residing in the Northern Marshall Islands after 1978."

One of the ways in which the results of the Northern Marshall Islands Radiological survey was made available to people in the Marshall Islands was through a bilingual (Marshallese/English) book published by the United States Department of Energy in November 1982 and titled "The Meaning of Radiation for Those Atolls in the Northern Part of the Marshall Islands That Were Surveyed in 1978." The Introduction of that book states that "This book explains the results of the 1978 measurements for the following atolls: Rongelap, Utrik, Taka, Bikar, Rongrik, Ailinginae, Likiep, Ailuk, Jemo, Mejit, Wotho and Agelang." It also notes that "The reason scientists chose these atolls to study was because it is possible they were in the path the winds blew during some of the tests, and also because some information had been achieved previously about the radioactive atoms on some of these atolls."

The book describes radioactive fallout, the ways people can "receive radiation," and the ways that radiation could cause harm. It also provides some information specific to each individual atoll, including scientists' estimates as to "the largest amount of radiation a person might receive in one year from radioactive atoms that

came from the U.S. bomb tests" and "the highest average amount of radiation people might receive in the coming 30 years." The book gives scientists' estimates, based on a certain number of people who might live and eat local food only from a specific atoll or island, as to the number of people who "may die from cancers caused by things other than radiation from the atomic bomb tests" (i.e., baseline cancers) and the number that "may die in the future from cancers caused by radiation received in the coming 30 years from the atomic bomb tests" (i.e., excess cancers).

The numbers presented in the book by atoll are set out in Attachment 1.

Thus, based on the "best effort" estimates presented in this book, the negotiators of the Section 177 Agreement could expect that within an assumed population of 2,473 people living and eating local food only from these 12 atolls, an upper limit total of two cancer deaths would result from radiation received in the coming 30 years from the atomic bomb tests.

Radiation exposures received from living in and eating local food from an atoll during the 1980s and after would be considered "chronic" in nature. As such, they were routinely dismissed by U.S. officials, both during and after the settlement negotiations, as having no consequence. For example, even people who lived and ate local food at Rongelap and Utrik for 30 or more years beginning in the 1950s were referred to officially as "unexposed" if they had not been on Rongelap or Utrik at the time of the BRAVO thermonuclear test on March 1, 1954. This practice continued despite the constantly accumulating chronic exposures that they were receiving as a result of living in and eating food from an environment characterized by medical experts under contract to the Atomic Energy Commission as containing levels of radioactive contamination "higher than those found in other inhabited locations in the world." [BNL March 1957 Medical Survey of Rongelap and Utrik People Three Years After Exposure to Radioactive Fallout]

In fact, however, the only people officially recognized by the U.S. as "exposed" were those who had been physically present on Rongelap, Ailinginae or Utrik when BRAVO was detonated. The basis for the distinction was the "acute" doses—whether external or internal in nature—that they had received. It is generally agreed that for most people living in the Marshall Islands during the testing period, "acute" doses are many times higher than the chronic doses, accounting for more than 90% of the total dose to an individual or population.

The effects of such acute exposures, even at relatively low levels, can take decades to manifest. However, the 1982 DOE book gives no estimates as to the number of cancers or other illnesses that may be attributed to acute radiation exposures received during the testing period at any of the atolls in the Marshall Islands.

After the Section 177 Agreement came into effect, new scientific understanding of radiation health risks continued to develop and emerge. The 1990 report of the National Academy of Sciences Committee on the Biological Effects of Ionizing Radiation (BEIR V) documents that there are "Well demonstrated late effects" of low-dose radiation exposure which "include the induction of cancer" and that new data developed since the completion of the 1980 BEIR III report show that "The cancer risk estimates derived with the preferred models used in this report are about 3 times larger for solid cancers...and 4 times larger for leukemia than the risk estimates presented in the BEIR III report."

In 1994, a study conducted by the Radiation Effects Research Foundation presented for the first time comprehensive data on the incidence of solid cancer among A-bomb survivors, expanding the knowledge of the range of health effects of exposure to radiation. (Cancer Incidence in Atomic Bomb Survivors, Radiation Research Society.)

Also, during the 1990s, a new understanding developed regarding the level and extent of the exposures in the Marshall Islands. Reports such as Radioactive Debris from Operation Castle, Islands of the Mid-Pacific, (Breslin, A. J.; Cassidy, M. E.; New York: U.S. Atomic Energy Commission, New York Operations Office, Health and Safety Laboratory; NYO-4623; 1955) declassified in 1994 from its previously Secret status, documents significant doses at virtually every atoll during the 1954 series of tests. A comparison study provided to staff members of this Committee in April 2004 documents that even the atoll with lowest average individual external radiation dose in the Marshall Islands exceeded the average dose to the populations living in the six counties closest to the Nevada Test Site during the respective periods of atmospheric testing.

Indeed, the full impact of exposures throughout the Marshall Islands has yet to be determined. A new measure of the anticipated late effects of those exposures was made available to the Marshall Islands just last month with the release of a recent study by the National Cancer Institute. (Estimation of the Baseline Number of Cancers Among Marshallese and the Number of Cancers Attributable to Exposure to

Fallout from Nuclear Weapons Testing Conducted in the Marshall Islands. Prepared for Senate Committee on Energy and Natural Resources, September 2004.) While acknowledging (at page 2) that "To date, there has not been an epidemiologic study of the Marshallese to estimate the total numbers of cancers and other serious illnesses resulting from exposure to radioactive fallout," the NCI states that "It is possible, however, to develop estimates of the number of baseline cancers and radiation related cancers based on estimated doses."

The NCI study estimates that, primarily as a result of past exposures, 532 radiation related cancers may be expected to occur among the 1954 Marshall Islands population of 13,940.

Included in those 532 excess cancers are 297 estimated to occur among people from atolls other than the four specifically provided for in the Section 177 Agreement (per Table 3 at page 20 of the study). NCI estimates 70 radiation related cancers among people who lived in the southern atolls that were not included in the 1978 radiological survey, as well as an unspecified number among people who lived at Wotje (indicated as an "Other northern atoll" in Table 3 but not included in the 1978 survey).

Tables 2a and 2b of the NCI study indicate that of the 532 expected radiation related cancers, only 243 are estimated to have occurred during the 1946-2003 time period while 289 are estimated to occur in 2004 and later.

The estimated 532 excess cancers, attributable to radiation created by the nuclear testing program, are in addition to an estimated 5,600 cancers "expected to occur in the absence of exposure to radioactive fallout from tests conducted in the Marshall Islands" (page 14).

#### **Radiogenic Illnesses Other Than Cancer**

Although NCI says that it is possible to develop estimates of the number of cancers, it acknowledges that "estimation of diseases other than cancer is more problematic." Accordingly, the study does not address other non-malignant health conditions which are known to result from exposure to radiation. The thyroid gland is especially sensitive to radiation, particularly radioactive iodine, which was a large component of the fallout which spread over the Marshall Islands. It is also a difficult radionuclide to gauge because of the short half lives of its various isotopes. Even in small amounts, radioactive iodine can cause extensive damage in children.

While there has never been a systematic medical surveillance program of the entire Marshall Islands, a high prevalence of thyroid disease was documented in populations at 12 atolls that were thought not to have received significant fallout from BRAVO. (Hamilton, T. E.; van Belle, G.; LoGerfo, J. P.; "Thyroid Neoplasia in Marshall Islanders Exposed to Nuclear Fallout," Journal of the American Medical Association, 258:629-636; 1987) Eight of those twelve atolls (Wotje, Maloelap, Lae, Ujae, Kwajalein, Jaluit, Ebon and Mili) were not included in the 1978 northern islands survey, leading the investigators to state that "These findings suggest that the geographic extent of radioiodine exposure from the 1954 BRAVO test was much broader than previously assumed."

The former Chief of the Clinical Epidemiology Branch of the National Cancer Institute called those findings "astonishing" and, in a paper prepared for the Tribunal, stated that "these tumors may be regarded in effect as a biological dosimeter that indicates unmeasured fallout of thyroid-damaging radioiodines in a similar mixture to those on Rongelap." [Radiation Effects Among the Marshallese, Robert W. Miller, MD, December 15, 1989].

In 1998, the CDC estimated that approximately 6.3 billion curies of Iodine-131 had been released to the atmosphere as a result of nuclear testing in the Marshall Islands. That amount is 42 times the 150 million curies released from events at the Nevada Test Site, 157 times the 40 million curies released during the Chernobyl accident, and more than 8,500 times the 739,000 curies released as a result of Hanford operations.

A subsequent calculation of the amount of I-131 released by the nuclear tests in the Marshall Islands notes that the CDC value of 6.3 billion curies "appears too low by at least 32% and possibly by as much as 42%." (Simon, Steven; "To Mr. Oscar deBrum, Information update and comment," August 23, 1999 personal e-mail). Based on Dr. Simon's calculations, "A better estimate is between 7.9 and 8.5 billion curies. Thus, the release of I-131 in the Marshalls was closer to 53 times (or as high as 57 times) greater than that released at the NTS rather than 42 times as stated."

The 1987 Hamilton study noted mean latency periods for thyroid nodules of 13 years for Rongelap children and 25 years for Utrik children and stated that "Since latent periods at least as long as 34 years are thought to exist in other populations exposed to thyroid irradiation, it will be necessary to continue close follow-up of this population."

Unfortunately, recognition of the effects of the exposures on the thyroid was greatly delayed. As recalled in late 1994 by Dr. Victor Bond, a longtime member of the BNL medical teams that routinely examined the people of Rongelap and Utrik, "And quite frankly, I'm still a little embarrassed about the thyroid. [T]he dogma at the time was that the thyroid was a radio-resistant organ.... [I]t turned out they had...very large doses of iodine...to the thyroid." [page 589 of Advisory Committee on Human Radiation Experiments Final Report dated October 1995]

Dr. Eugene Cronkite, another longtime member of the teams, noted in 1994 that "there was nothing in the medical literature...to predict that one would have a relatively high incidence of thyroid disorders." [page 589 of Advisory Committee on Human Radiation Experiments Final Report dated October 1995]

"Nine years after the accident, a 12-year-old Rongelap girl was found to have developed a nodule in her thyroid gland. Within the next 3 years, 15 of the 22 Rongelap people who had been under age 10 years at the time of exposure had developed thyroid lesions. At that time, the first thyroid nodule in an exposed Rongelap adult appeared and in 1969, 15 years after the accident, the first thyroid nodule appeared among the exposed people of Utrik. It has become evident that thyroid abnormalities—which include benign and malignant thyroid tumors and thyroid failure—are the major late effects of the radiation received by the exposed Marshallese." [Radiation effects in the Marshall Islands; Jacob Robbins, William H. Adams; Radiation and the Thyroid: Proceedings of the 27th Annual Meeting of the Japanese Nuclear Medicine Society, Nagasaki, Japan October 1-3, 1987; published by Excerpta Medica 1989, page 16]

The same paper reports (beginning at page 16) that "The first thyroid abnormality to appear in the exposed Marshallese people was radiation-induced thyroid atrophy, resulting in profound growth failure in two boys. However, the etiology was not recognized until after thyroid nodules began to appear. The reason was that the diagnosis of hypothyroidism, at that time based on PBI measurement, was obscured by an elevated iodoprotein level, later found to be prevalent in the Marshall Islands (2, 3, 11). Subsequent surveys by TSH measurement and TSH response to TRH, in addition to routine measurement of thyroid hormone levels, revealed 12 cases of subclinical thyroid hypofunction (12) that could not be attributed to prior thyroid surgery. A high proportion of the Rongelap people who were aged under 10 years when exposed had the most marked TSH elevations, which probably favored the development of thyroid nodules (4). Although the finding of hypothyroidism was surprising at first, reevaluation of the thyroid absorbed radiation dose by Lessard et al (1) now shows that the exposure was in a range known to be capable of causing thyroid failure."

And (beginning at page 21): "Relevance of the Marshall Islands Experience -- The information collected on the Marshallese people constitutes an important body of data relating to the late effects of radiation absorbed by the thyroid gland. It shows convincingly that the induction of thyroid nodules and thyroid cancer is a major cause of late morbidity. Although it give us some idea of the risk coefficient for internal radiation, the magnitude is uncertain owing to the lack of precise data about radionuclide intake, and because of the small population involved."

"From the Marshallese experience it is clear that, in any future accident involving radioiodines, the use of oral stable iodine to suppress radioiodine uptake by the thyroid, particularly in children and pregnant women, should be considered." From "Late Radiation Effects in Marshall Islanders Exposed to Fallout 28 Years Ago," by Robert A. Conard, M.D., in Radiation Carcinogenesis: Epidemiology and Biological Significance, Raven Press, NY, 1984, p. 67.

Benign thyroid conditions account for more than 1,000 of the 2,097 personal injury awards made by the Nuclear Claims Tribunal. A 1985 study estimated the rate of radiation induced thyroid nodules would be two to three times the rate of thyroid cancer (H. Maxon, S. Thomas, C. Buncher, S. Book and V. Hertzberg. Thyroid effects. In: Health Effects Model for Nuclear Power Plant Accident Consequence Analysis. Part II: Scientific Basis for Health Effects Models, pp. 181-226 (J.S. Evans, D.W. Moeller and D.W. Cooper, eds.) NUREG/CR-4214, U.S. Nuclear Regulatory Commission, Washington, D.C., 1985) The NCI study estimates an excess 262 radiation induced thyroid cancers, suggesting that 524 to 786 radiation induced thyroid nodules would occur.

Inadequate medical monitoring has prevented early treatment in many cases and has also precluded the diagnosis of many diseases. Nevertheless, it became increasingly apparent that the health consequences of the U.S. nuclear weapons testing program in the Marshall Islands have been much greater than could have been foreseen in the 1980s.

These studies indicate that there is a relationship between the level of exposure and latency period. It took nine years after BRAVO to recognize the thyroid effects

in Rongelap. The scientific understanding of the full effects of radiation on the thyroid and other health effects continues to develop.

#### **A Presumptive Approach**

The Tribunal, in determining personal injury damages resulting from the testing program, found guidance in similar U.S. programs. At the time of consideration of the Tribunal personal injury program, the Veterans Administration had two programs for radiation affected veterans. The initial program utilized by the VA was a non-presumptive program that utilized a form of "probability of causation" based in part on the radiation dose received by the veteran to determine service-connected disability. In 1988, a statutory program was enacted which granted a presumption of service connection for veterans who developed cancer from a list of statutorily determined radiogenic conditions.

Later, in 1990, the Radiation Exposure Compensation Act was enacted, which provided compensation to various groups of radiation exposure victims in the U.S., including the "Downwinders,"—individuals who resided during the testing period in certain counties downwind of the nuclear tests in Nevada. For these Downwinders who developed a condition on the statutory list of radiogenic conditions, it was presumed their condition resulted from the nuclear tests and they were eligible for an award of \$50,000, or \$75,000 if they were "on-site."

The Tribunal ascertained early on that there was insufficient evidence of individual doses to provide a basis for application of a "probability of causation"—analysis and, based upon the U.S. VA and Downwinder precedent, adopted a presumptive program that required residence in the Marshall Islands and development of a radiogenic disease determined by regulation. In examining the Downwinders compensation program, the Tribunal found compelling comparisons to justify the presumptive approach. In both cases, the affected populations were unknowing victims of the fallout from the testing program. In both cases, there was little effort made to monitor exposures to the population at large. Although the Marshall Islands was geographically somewhat larger than the area covered by the Downwinders program, the total yield of the nuclear tests in the Marshall Islands was almost 100 times greater than that in Nevada. A comparison of estimated doses for Downwinders and Marshall Islanders indicates that the atoll in the Marshall Islands with the lowest average dose was comparable to the average dose of the Downwinders.

The most recently adopted compensatory program for radiation related injuries in the U.S. is the Energy Employee Occupational Injury Compensation Program. This program, designed to compensate Department of Energy workers exposed to radiation in weapons development facilities, adopted a probability of causation approach which awarded compensation to workers who were able to show that it was probable their medical condition was the result of their exposure to radiation. However, even in this context, where there was careful monitoring of worker exposures, there were special provisions made for workers for whom there was inadequate information to develop a dose reconstruction and for whom there was a reasonable likelihood of harm. Such workers may be recognized as a "Special Exposure Cohort"—for whom causation would be presumed without reference to level of exposure, if they developed a listed radiogenic condition.

The reality is that a radiation induced cancer has no specific indicator to separate it from cancers generally. The U.S. has recognized that reality when there is insufficient information to provide a probability of causation analysis of the origin of a radiation related condition, it is appropriate to adopt a presumptive approach compensating all radiogenic cancers where there is a reasonable possibility of harm, and accept the likelihood that there will be an element of over-inclusiveness in compensation. The NCT has adopted that philosophy as well. The over-inclusiveness of such compensation must be accepted as a necessary part of compensation for such injuries. The NCI study clearly indicates there are injuries which have yet to be compensated. Failure to compensate those injuries indicates that the level of compensation for personal injuries is manifestly inadequate.

Another element of our compensatory programs is the level of compensation for awards. The Tribunal has adopted a scaled approach, with awards ranging from \$12,500 for certain benign conditions, to \$125,000 for the most serious cancers, while the U.S. programs tend to be lump sum awards, ranging from \$50,000 for Downwinders (\$75,000 if "on-site") to \$150,000 for Department of Energy employees. It should be acknowledged that awards of this nature tend to be smaller than awards in fully adjudicated legal actions. It could be argued that both U.S. and the Tribunal programs significantly under compensate awardees. If, for instance, the award levels were based on the value of a statistical life, as utilized by regulatory agencies for cost-benefit analysis, the award levels would be much higher. For

instance, it has been reported in "Valuation of Human Health and Welfare Effects of Criteria Pollutants"—Appendix H, The Benefits and Costs of the Clean Air Act, 1990 to 2010, EPA, 1997) that while values differ from program to program, the mean value of a statistical life for regulatory purposes is \$4.8 million. Under such a valuation, total compensation to date by the Tribunal for personal injuries, even based solely on the NCI estimate of 532 cancers caused by radiation exposure from the nuclear testing program, is far from adequate compensation for the injuries suffered by the people of the Marshall Islands.

Article IV, Section 3 of the Section 177 Agreement, entitled "Governing Law,"—directs that "In determining any legal issue, the Claims Tribunal may have reference to the laws of the Marshall Islands, including traditional law, to international law and, in the absence of domestic or international law, to the laws of the United States." "

The Tribunal's approach to compensating personal injuries, as part of its responsibility to determine all claims arising out of the Nuclear Testing Program is a reasonable one, firmly based on the U.S. experience in addressing radiation related injury. The use of a presumption of causation rather than a probability of causation analysis is reasonable in light of the absence of individual exposure information, as is done in similar U.S. programs. The extension of the presumption of exposure throughout the nation is reasonable in light of the evidence of exposure outside the Four Atolls, evidence which was not known at the effective date of the Section 177 Agreement and which has been reinforced most recently by National Cancer Institute report on cancer in the Marshall Islands.

#### **Determination of Property Claims**

The Nuclear Claims Tribunal has approached claims involving damage to property as opposed to personal injury. Unlike the administrative scheme created by the Tribunal to address personal injury claims, property claims have been dealt with on an adjudicatory basis to date by consolidating the various individual property claims within each atoll and addressing these claims in the form of a class action. The Tribunal has heard testimony from expert witnesses on behalf of claimants as well as from the Defender of the Fund in reaching its decisions.

Although it would be inappropriate to comment on the Tribunal's decisions, the Four Atolls have submitted a statement on these issues and the Congressional Research Service Report and former Attorney General Thornburgh's report likewise deals with issues related to the property claims heard by the Tribunal.

In accordance with Article IV, Section 3 of the Section 177 Agreement, the Tribunal has referred to the laws of the United States in making its decisions in the absence of applicable Marshall Islands law or international law. In fact, in virtually every aspect of the Tribunal's decisions in property claims, the Tribunal has substantially, if not totally relied on established U.S. laws and precedents.

#### **Conclusion**

The Tribunal was not limited to a specific sum in determining damages under the Section 177 Agreement, but was charged with making a final determination of all claims, past, present and future based on, arising out of or in any way related to the Nuclear Testing Program. The level of these damages was not known and could not have been known at the time the Section 177 Agreement came into effect. Based upon the NCI study it is clear that exposures during the testing program have had and will continue to have a long lasting impact on the health of the Marshallese people. The U.S. has accepted responsibility for the damages from the Nuclear Testing Program under the terms of the Section 177 Agreement. Our understanding of the extent of and effects of the radiation from the testing program continues to develop in ways that were not known and could not have been known at the effective date of the Agreement. The determinations of the Tribunal have shown damages far in excess of those contemplated under the Agreement, rendering it manifestly inadequate. More than \$15 million is owed on personal injury awards and nearly \$1.1 billion remains unpaid on property damage awards. Due in large part to the failure of the Nuclear Claims fund to meet its expected performance goal, the value of the Fund has eroded from the original \$150 million provided by the U.S. under the 177 Agreement in late 1986 to less than \$3.5 million today. The "Changed Circumstances"—provisions of the Section 177 Agreement may not require the Congress to make additional funding available to the Marshallese victims of the testing program, but it is clear that there remain significant unaddressed and uncompensated damages that were not and could not have been known at the time of the Agreement.

## Attachment 1

## Atoll by Atoll Analysis of Radiation Caused Cancer

Atoll	Number of People	No. Baseline Cancers	No. of Excess Cancers
Wotho	76	3	0.002 to 0.01
Ailinginae	100	5	0.03 to 0.2
Rongelap	233	10	0.1 to 0.6
Rongrik	100	5	0.03 to 0.2
Likiep	487	20	0.03 to 0.2
Taka	100	5	0.002 to 0.01
Jemo	100	5	0.005 to 0.03
Utrik	328	15	0.02 to 0.2
Bikar	100	5	0.02 to 0.2
Ailuk	420	20	0.04 to 0.2
Mejit	329	15	0.03 to 0.2
Ujelang	100	5	0.002 to 0.01
	2,473	113	0.311 to 2.06

Source: DOE, "The Meaning of Radiation for Those Atolls in the Northern Part of the Marshall Islands That Were Surveyed in 1978." (1982)

## Attachment 2

Marshall Islands Nuclear Claims Tribunal  
Summary of Personal Injury Awards by Medical Condition as of 5/17/05

1. Leukemia (other than chronic lymphocytic leukemia).....	53
2. Cancer of the thyroid	
a. if recurrent or requires multiple surgical and/or ablation .....	32
b. if non-recurrent or does not require multiple treatment.....	103
3. Cancer of the breast	
a. if recurrent or requires mastectomy.....	40
b. if not recurrent or requires lumpectomy.....	62
4. Cancer of the pharynx.....	26
5. Cancer of the esophagus .....	7
6. Cancer of the stomach.....	35
7. Cancer of the small intestine.....	4
8. Cancer of the pancreas.....	25
9. Multiple myeloma.....	5
10. Lymphomas (except Hodgkin's disease).....	59
11. Cancer of the bile ducts.....	4
12. Cancer of the gall bladder.....	0
13. Cancer of the liver (except if cirrhosis or hepatitis B is indicated) .....	38
14. Cancer of the colon .....	29
15. Cancer of the urinary tract, including the bladder, renal pelvis, ureter and urethra.....	10
16. Tumors of the salivary gland	
a. if malignant .....	6
b. if benign and requiring surgery .....	26
c. if benign and not requiring surgery .....	4
17. Non-malignant thyroid nodular disease (unless limited to occult nodules)	
a. if requiring total thyroidectomy.....	19
b. if requiring partial thyroidectomy .....	249
c. if not requiring thyroidectomy.....	729
18. Cancer of the ovary .....	57
19. Unexplained hypothyroidism .....	20
20. Severe growth retardation due to thyroid damage .....	2
21. Unexplained bone marrow failure .....	6
22. Meningioma .....	17
23. Radiation sickness diagnosed between June 30, 1946 and August 18, 1958, inclusive .....	72
24. Beta burns diagnosed between June 30, 1946 and August 18, 1958, inclusive.....	72
25. Severe mental retardation (provided born between May and September 1954, inclusive, and mother was present on Rongelap or Utrik Atols at any time in March 1954) .....	0
26. Unexplained hyperparathyroidism .....	1
27. Tumors of the parathyroid gland	
a. if malignant .....	0
b. if benign and requiring surgery .....	5
c. if benign and not requiring surgery .....	1
28. Bronchial cancer (including cancer of the lung and pulmonary system).....	223
29. Tumors of the brain, including schwannomas, but not other benign neural tumors .....	14
30. Cancer of the central nervous system.....	0
31. Cancer of the kidney .....	14
32. Cancer of the rectum .....	20
33. Cancer of the cecum.....	3
34. Non-melanoma skin cancer in individuals who were diagnosed as having suffered beta burns under number 24 above .....	1
35. Cancer of the bone .....	8
36. Autoimmune thyroiditis .....	3

Total number of compensable conditions (diagnosed in 1,936 individuals) = 2,103

Total amount of compensation awarded is \$87,111,250, of which \$15,515,427 remains unpaid

**Response to questions submitted for the record by Judge James Plasman,  
Nuclear Claims Tribunal**

**Question 1) It is generally accepted that the northern atolls in the RMI were most negatively affected by nuclear testing, yet the Tribunal has allocated monies to citizens throughout the RMI, even without evidence seen recently in the NCI study. Can you explain how the "presumption of causation" approach you mention is based in past empirical studies to support this system of awards?**

**Answer:** In adopting a presumption of causation approach, the Tribunal primarily relied upon the precedent set by the Radiation-Exposed Veterans Compensation Act of 1988, Public Law 100-321, and the Radiation Exposure Compensation Act (RECA) of 1990, Public Law 101-426. A primary source of scientific support for these programs was the work of the National Academy of Sciences' Committee on the Biological Effects of Ionizing Radiation. Passage of the Veterans Compensation Act in 1988 relied primarily upon the Committee's third report, so-called BEIR III, while RECA had the benefit of BEIR V. The BEIR Committee made heavy reference to the work of the Radiation Effects Research Foundation (RERF), a bilateral undertaking of Japanese and American scientists to study the human health effects of the atomic bombings of Hiroshima and Nagasaki. The Committee also used data from other well-studied human populations exposed to radiation and referred to experimental studies on laboratory animals. Of particular importance, supporting the use of a presumption of causation was the determination that there was no threshold dose below which stochastic effects such as the development of cancer would not occur. To the extent that these U.S. programs relied upon this body of work as the scientific basis for compensation, by extension, the Tribunal made similar reliance.

In adopting the Veterans Compensation Act and RECA, Congress was clearly motivated by the perception that the government had wronged these victims of radiation exposure and that unreasonable standards of proof should not stand in the way of compensating deserving individuals.

Both of these compensatory systems rely upon a presumption of causation to determine eligibility for compensation. In both situations there was a desire on the part of Congress to enact a system that was fair and reasonable, in light of the difficulties in proof of causation, but also that was efficient and cost effective. The use of the presumption of causation addressed these concerns. In speaking against an amendment to remove the immunity from law suit of governmental contractors involved in atomic weapons development (floor debate on NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1991, Congressional Record -- August 03, 1990, p. S12117) Senator Charles Grassley of Iowa addressed these concerns:

The litigation solution works as a cruel hoax on the intended beneficiaries; it holds out the prospect for recovery, but frustrates the victims by delay and expense. The Justice Department testified that radiation cases take much longer to prepare and try than do most other types of litigation; a typical case would take more than 5 years to resolve. Worse, simply repealing the Warner amendment will do nothing to solve the enormous proof problems that plaintiffs will face, attempting to link their exposure to current disease.

A straight repeal of the Warner amendment may give some a warm feeling, and it will surely bring a smile to a lawyer's face, but it will mean scant little for those who need help the most.

Mr. President, these people don't need lawyers, they need money to pay their medical bills, to care for their sick or terminally ill.

If the Government is responsible, and the evidence strongly suggests that it is, then let's create a compensation system outside of the courts to provide relief—faster, without litigation expenses, without having to prove fault, and without lengthy appeals.

In recent years, we have shown a preference for compensation over litigation, with enactment of the child vaccine compensation legislation, the Radiation-Exposed Veterans Compensation Act of 1988, and the Veterans Dioxin and Radiation Exposure Act (Public Law 98-542) among others.

The motivation for a simple, reasonable administrative system was strengthened by the perception that the government had not only harmed these victims of radiation exposure, but had done so in a significantly wrongful manner. In floor comments on the Radiation-Exposed Veterans Compensation Act 1988 (see Congressional Record—Senate for April 25, 1988, pgs. 4637-4641), Senator Cranston of California said, "Science has clearly proven that ionizing radiation can produce serious adverse human health effects. While we do not have all the answers as to how much radiation exposure is necessary before the various adverse effects appear, there is

a long list of cancers for which radiation has been established as a risk factor." He went on to say that "these veterans were not informed of the risks associated with their participation in the nuclear weapons testing program, nor was their health status systematically monitored thereafter. Accordingly, I strongly! believe that we have the responsibility to ensure that these veterans finally are treated in an even-handed and compassionate way with respect to their claims for VA benefits."

The Marshallese people were never informed of the risks associated with their participation in the nuclear tests in the Pacific. Their health status was never systematically monitored until after the tragic events following the BRAVO test in 1954, and then, only a small fraction of the exposed population was covered. These similarities between the U.S. affected populations and the Marshallese affected population provide compelling justification for following U.S. precedent in adopting a presumption of causation.

The Tribunal provided an in-depth discussion of the reasons for believing the extent of fallout in the Marshall Islands went beyond the four atolls identified in the Section 177 Agreement, on March 18, 2005, in Majuro to two senior staff members of United States Senate Committee on Energy and Natural Resources and to the U.S. Ambassador to the Republic of the Marshall Islands. I am attaching a written statement which restates the oral presentation made at that time. Although extensive reference is made to reference materials, I have not included them because of their bulk and because the essential information is quoted in the written statement. I believe the Senate staff made electronic copies of these references for your committee staff. Should you desire a copy of the references, please let me know and I will have them copied and sent to you.

In summary form, however, the Tribunal felt there was ample information available, even before the NCI study, to support the extension of the presumption of causation throughout the Marshall Islands. First, is an article which appeared in the Journal of the American Medical Society (Hamilton, T. E.; van Belle, G.; LoGerfo, J. P.; "Thyroid Neoplasia in Marshall Islanders Exposed to Nuclear Fallout," Journal of the American Medical Association, 258:629-636; 1987), which investigated the appearance of thyroid nodules in 12 atolls previously thought to be unexposed to fallout from the testing program. The investigators not only found a higher than expected incidence of thyroid nodules in these atolls, but also found the incidence rate varied linearly with the distance from the testing areas in the northern atolls, suggesting that the nodules were caused by radiation from the tests.

Secondly, the findings of the Nationwide Radiological Study, issued in 1994 reported Cesium-137 levels two to 11 times greater than global fallout at 15 atolls that were not included in the Section 177 Agreement.

The release in 1994 of a previously classified Atomic Energy Commission report from 1955 (Breslin, A. J.; Cassidy, M. E.; "Radioactive Debris from Operation Castle, Islands of the Mid-Pacific," New York: U.S. Atomic Energy Commission, New York Operations Office, Health and Safety Laboratory; NYO-4623; 1955) provided significant support for the nationwide application of the presumption of causation by the Tribunal. That report was based on aerial monitoring conducted during the Castle series throughout the Marshall Islands and indicated external radiation exposures to every atoll of the Marshall Islands, in contradiction to the DOE position that only the northern four atolls received fallout from the tests. Internal exposures would have increased the level of exposure even higher than those reported by Breslin and Cassidy.

During the testing program, a monitoring station was maintained on Kwajalein Atoll. Although the gummed film methodology provided only a crude measurement of fallout, "The clear indication from the monitoring station was that deposition of fresh fallout occurred at Kwajalein Atoll within a single day following every one of the detonations over 1 megaton explosive yield" (Simon, S. L.; "STATEMENT OF STEVEN L. SIMON, PhD, Director, Nationwide Radiological Study, Republic of the Marshall Islands, Submitted to the United States House of Representatives, Committee on Natural Resources, Subcommittee on Oversight and Investigations in respect to United States Weapons Testing in the Marshall Islands," February 24, 1994.) These findings were reiterated in a 1997 report (Takahashi, T., et al.; "An Investigation into the Prevalence of Thyroid Disease on Kwajalein Atoll, Marshall Islands," Health Phys. 73:199-213; 1997) that stated the data showed that "all eighteen of the large Marshall Islands tests (those >1 MT explosive yield) were detected at Kwajalein at about 100 X the background radiation level (Simon and Graham 1996). Presumably, other mid-latitude atolls in the Marshall Islands received similar amounts of early fallout as did Kwajalein."

These studies, and those additionally discussed in the attached paper, provide an ample basis for the extension of the presumption of causation throughout the Marshall Islands.

**Question 2) The Tribunal has also taken the step of providing awards to individuals born after the end of U.S. nuclear weapons testing. What legal precedent or empirical evidence did the Tribunal use in justifying these awards?**

**Answer:** The relationship between the testing program and health effects for those born after the testing period presumably would be the result of either residual contamination or genetic effects to children of parents exposed to radiation. It is clear that dangerous levels of radiation continued to exist in parts of the Marshall Islands even after the testing period. Perhaps the most significant evidence of this is the return of the people of Bikini to their atoll in 1969 upon assurances of the U.S. that their homeland was safe, only to be removed again in 1978 upon the discovery that they were exhibiting exposures far in excess of safe levels, because of the failure to adequately account for dietary exposure pathways. Levels of contamination in the other northern atolls raised similar concerns and eventually led to the decision by the Rongelap people to leave their homelands in 1985, a move which appears justified in light of subsequent events.

In terms of genetic effects, the current state of knowledge is represented in the recently released National Academy of Sciences BEIR VII (Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII B Phase 2) report. Therein it is reported (Executive Summary, p. 16, <http://books.nap.edu/catalog/11340.html>):

Early in the 20th century, it was demonstrated that ionizing radiation could induce mutations in the germ cells of fruit flies. Those findings were subsequently extended to a number of other organisms including mice, establishing the fact that radiation is a mutagen (an agent that can cause mutations in body cells); human beings are unlikely to be exceptions.

Nonetheless, it has been difficult to construct studies of human populations to make statistically significant statements about genetic effects in humans. Because of the reduced likelihood of causation due to either residual contamination or genetic effects, when the Marshall Islands legislative body (Nitijela) adopted legislation to extend the presumption of causation to those not present during the testing period, the Tribunal reduced awards to this class of awardees by fifty percent. This reduction is supported by the findings of BEIR VII, which reports "the genetic risks, as measured by the indicators mentioned earlier, are very small." (Executive Summary, p. 17.)

**Question 3) In the RMI's Petition, \$26.9 million is requested to pay personal injury awards that have been approved by the Tribunal but are in excess of the trust fund. Do you see this request as exhibiting a "changed circumstance"?**

**Answer:** Yes. While there were grounds for a determination of changed circumstances in relation to this request even before the NCI study, the results of the NCI study clearly establish a changed circumstance in that the number of cancers and other health effects greatly exceeds what was known at the time the Section 177 Agreement became effective.

The baseline of what was known about radiation health effects may be established by a paper, presented in October 1987 to the Japanese Nuclear Medicine Society, by Jacob Robbins (Clinical Endocrinology Branch, National Institutes of Health, Bethesda, Maryland) and William H. Adams (Medical Department, Brookhaven National Laboratory, Upton, New York), two well established scientists with significant experience in the Marshall Islands (Brookhaven National Laboratory was the institution charged with observing and reporting on the health of the affected Marshallese people.) This paper, "Radiation Effects in the Marshall Islands," was later published in Radiation and the Thyroid: Proceedings of the 27th Annual Meeting of the Japanese Nuclear Medicine Society, Nagasaki, Japan, October 1 B 3, 1987, Shigenobu Nagataki, editor, Excerpta Medica, Amsterdam-Princeton-Hong Kong-Tokyo-Sydney, 1989.

In terms of early radiation effects, they reported on Rongelap "about two-thirds of the people developed anorexia and nausea and one-tenth had vomiting and diarrhea...skin burns appeared after 12 B 14 days in about 90% of the Rongelap inhabitants."

In regard to late effects, they noted: "It has become evident that thyroid abnormalities which include benign and malignant thyroid tumors and thyroid failure are the major late effects of the radiation received by the exposed Marshallese." They found the following thyroid effects, through 1986:

- 2 cases of profound growth failure in two boys due to radiation related thyroid atrophy;
- 12 cases of hypothyroidism not related to thyroid surgery
- 51 observed thyroid nodules

- 16 expected
- 35 excess
- 9 observed thyroid cancers
  - 2.1 expected
  - 7 excess

They observed three fatal cancers and six "nonlethal" cancers as other Alate radiation effects B or possible radiation effects."

- 1 fatal leukemia
- 1 fatal stomach cancer
- 1 fatal cranial meningioma
- 1 nonlethal neurofibroma
- 1 nonlethal breast cancer
- 1 nonlethal colon cancer
- 3 pituitary tumors

These findings establish what was known at the time of the Section 177 Agreement.

The NCI study establishes a basis for what we know now about the health effects, and reveals the following comparisons of radiation induced cancers:

Cancer	1986 (Adams/Robbins)	Current (NCI)
Leukemia	1	5
Stomach	1	15
Colon	1	157
Thyroid	7	262
Other	6	93
Total	16	532

It should also be acknowledged that the DOE in 1982 estimated an additional two cancers would result from exposures in the thirty years following the Radiological Survey of the Northern Marshall Islands, conducted in 1978.

If the same ratio of radiation excess thyroid nodules to excess thyroid cancers that appears in the Adams/Robbins paper (35/7—5) is applied to the NCI estimate of excess thyroid cancers, the number of radiation caused thyroid nodules currently anticipated would be  $5 \times 262 = 1310$ .

The stark contrast of what was known at the time of the Section 177 Agreement about the health effects resulting from the testing program and what is known now in light of the NCI study must be regarded as a changed circumstance.

While the Petition as originally filed included a request of \$26.9 million for the unpaid balance of personal injury awards, that amount now stands at \$15.7 million. However, with more than half the cancers estimated by the NCI yet to develop, that amount reflects only the current balance due and does not reflect future awards.

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The CHAIRMAN. Thank you. I thank both the members of the panel for their testimony. I apologize to you. We have just been called to a series of votes on the House floor, so we are going to have to recess the Committee momentarily, and it could be as long as a half hour or 40 minutes before we are able to get back. So I apologize to you for that. I know that you have been waiting a long time to have your chance to testify and have questions, but we will return as soon as we can.

The Committee will stand in recess.

[Recess.]

The CHAIRMAN. The Committee will come to order.

I apologize for the delay, and because we have so many different things going on today we are going to hold the hearing record open so that members can ask questions in writing. They will be submitted to you in writing. If you could answer them in writing so they can be included in the hearing record.

Mr. Minister, can you describe to the committee here today how the loss of land use argument in your petition applies to lands today, and were those lands lost after the 1986 agreement or were they not known at that time of the Section 177 Agreement?

Mr. ZACKIOS. Thank you, Mr. Chairman. If I understand, the question directly relates to the loss of land before the testing program and today. I would begin my submission to you, Mr. Chairman, that land, to the Marshallese people is their identity. The people lived off the land prior to the testing program and made all their livelihood from the land.

Today, 50 years later much of our populations have not returned to some of these lands that we are talking about. Obviously, the Nuclear Claims Tribunal has made awards on these lands, and I believe that the lost use of land, as determined by the tribunal, has been done in a manner as described by former Governor and Attorney General Thornburg in accordance with legal principles very similar to those established by U.S. legal systems, but land is a very important part of the Marshallese people. It is indeed their identity, and it's a legacy for us when we lose our land.

The CHAIRMAN. Were there new losses discovered after 1986 or how did that change since 1986?

Mr. ZACKIOS. I am not too sure I get the question properly, Mr. Chairman. Would you please, if you could kindly rephrase it?

The CHAIRMAN. I guess the question is, is that we had the 1986 Compact with the Section 177 Agreement that was included in it, and with the Change of Circumstances petition that has been filed, are you alleging that there was a change of circumstances in regard to the loss of land since 1986?

Mr. ZACKIOS. That's a very good question, Mr. Chairman, and if I can get back to you with an answer on that question?

The CHAIRMAN. I will let you answer that for the record and you can answer it in writing for the record.

Has the Marshall Islands Government ever formally approached past administrations regarding changes or concerns they had regarding the radiological clean-up standards on the islands?

Mr. ZACKIOS. Mr. Chairman, yes, we have done that. In fact, in numerous occasions where we had the opportunity to meet with the Department of Energy, we have always approached them on issues of monitoring of the land from the four atolls, those that were particularly devastated by the testing program.

I will give an example of the Runit Dome, which I have made mention of in my statement. To date there is no monitoring of the Runit Dome in the Marshall Islands, and we have heard the testimony that there is monitoring. Well, Mr. Chairman, that's one good example of no monitoring in the Republic of the Marshall Islands from the testing program.

The CHAIRMAN. There is no monitoring there?

Mr. ZACKIOS. There is no monitoring of the Runit Dome to this date.

The CHAIRMAN. Judge Plasman, in your testimony you talked about the case in Nevada with the downwind—what did you—

Judge PLASMAN. Downwinders, sir?

The CHAIRMAN. Downwinders, that was it. And it was my understanding of your testimony, and I want to make sure I understand this, that the presumption was made that if they did get sick and it appeared to be from exposure, that they were then covered.

Judge PLASMAN. Mr. Chairman, I think the way that that program works is that if they were residing in one of the affected

counties during the specified test period and they developed a radiogenic condition as defined in statute, a list of, I think it's some 21 cancers now, then the presumption is that their condition was caused by the exposure from the Nevada tests and they qualify for compensation, without any independent evidence of the level of their exposure to radiation.

The CHAIRMAN. If we applied a similar program to the Marshalls, making the assumption that there was exposure, how many people would we be talking about that were living on the islands at the time that are still living on the islands?

Judge PLASMAN. Mr. Chairman, I think that that would be the population that was there during the testing period, which would have been about 14,000 people at that time. I would not be able—

The CHAIRMAN. Do you have any idea how many are left?

Judge PLASMAN. I would venture a guess based on the experience of the tribunal of the awards the tribunal has made, approximately 40 to 50 percent of those people have passed away, so perhaps similar number of the population that was present in the Marshall Islands during the testing period would—

The CHAIRMAN. 7,000 to 9,000?

Judge PLASMAN. Perhaps.

The CHAIRMAN. Thank you.

Ms. Drake, did you have questions?

Mrs. DRAKE. Thank you, Mr. Chairman.

Thank you for being here today. It has certainly for me been a very interesting panel discussion, both of these so far, and I think there will probably be a whole lot more that I learn about the Marshall Islands.

Judge Plasman, I think the biggest question that I have is what has been done to date? Because I have heard a lot of discussion about the 177 and opening it back up because there is new information now, but I also just heard about purchase of land, so I didn't know if land payments came out of that \$150 million settlement, or is there some way to tell us how much has been spent in the Marshall Islands since this happened, and what is the total compensation that has been awarded by the tribunal and to how many people? I would like to also say with that, I think all of us want to feel like we are doing the right thing, and that we feel like something very bad has happened here, and we would like to make sure that we are really understanding it and that we are doing the right thing in taking the responsibility that we should.

Judge PLASMAN. All right. Thank you, Representative, Mr. Chairman. In terms of first the personal injury portion of the program, the tribunal has made about 2,100 awards in the amount of some \$85 million I believe, of which approximately 65, \$66 million has actually been paid.

For the property claims, I mean you've asked a complex question in terms of how much has been paid. Under the 177 Agreement there were mandated payments from the trust fund that went to each of the four atolls on a quarterly basis, and those funds were subtracted from the total awards that the tribunal made in the cases of Bikini and Enewetak, so that the awards of the tribunal represent the net award. And in the case of Enewetak, the total

award was some \$386 million, and in the case of Bikini the total was some \$563 million. Now, that represented damages for lost abuse of the land for the period that they have been unable to use that property and for the period of time that that property is deemed unusable.

Mrs. DRAKE. How long will that be? Do we know? Is it ever going to be usable again?

Judge PLASMAN. Representative, Mr. Chairman, there are remediation measures that can be taken to clean up and return the land to usable, safe condition. A lot of these issues are covered in our decisions themselves, and I would, at the risk of annoying the Representative, I really would prefer to have these decisions made part of the record so that we don't take anything out of context, and certainly the representatives of the claimants from these atolls would be very willing to explain to you specifically what their position is on those.

Mrs. DRAKE. OK. Well, then let me just ask you last on the medical payments that have been made, is that strictly to the original inhabitants or does it also include descendants?

Judge PLASMAN. It includes descendants.

Mrs. DRAKE. It does include descendants. So——

Judge PLASMAN. Yes. Excuse me, Mr. Chairman, Representative, the tribunal awards have been made to the people that suffered the condition and if that person passes away, then to their survivors. In terms of the medical program established under the 177 Agreement, that provides health care for the people of the four atolls without regard to when they were born, and also includes those people who have received an award from the tribunal.

Mrs. DRAKE. I am sorry. I missed that. So if you live there now, regardless, do you have to be a descendant of someone who was there, or if I went there now, would I get free health care, or do you have to have been there at a certain period of time?

Judge PLASMAN. The Constitution of the Marshall Islands does provide for universal health care as a constitutional right, so in that respect there—I mean there are payments that are made from as part of the payroll for people and co-pay provisions. But I mean, yes, you would be eligible for health care on that basis, but there is additionally the 177 health plan that provides health care specifically for the people of the four atolls and those people who have received a tribunal award.

Mrs. DRAKE. Thank you very much.

Mr. Chairman, my time has expired.

The CHAIRMAN. Mr. Inslee, do you have any questions?

Mr. INSLEE. I do. Thank you, Mr. Chairman.

We just had a Downwinder jury verdict out at Hanford, Washington, for the Green Run release of radioactivity from the Hanford, Washington, site. The jury concluded that people were injured, thyroid problems related through radioactivity. Based on probably new information that we didn't have in the early '50s when the Government intentionally released this information.

That just points up that it would seem to me that there would, almost by necessity, be additional scientific information that now exists about the extent of radioactivity probably that—where it

went, and there is probably additional information about the physiological results of that. I have to believe that.

Is that the case? If so, why did this result or this group that reviewed this petition conclude there wasn't new information? I mean there is new information every week on radioactive results. That seems surprising to me. Judge Plasman, can you give any insight into that?

Judge PLASMAN. Yes, sir, you are right.

[Laughter.]

Judge PLASMAN. I know only what we've heard today about the interagency process that went into the review of the Marshall Islands' petition for changed circumstances. It sounds like it was an involved process, and I can't really speak to their review of it. I do believe that one of the difficulties is that there was a lack of monitoring at the time of the test program throughout the Marshall Islands. There are some instances of monitoring, one of which I think Representative Faleomavaega referred to, the so-called Breslin-Cassidy report, that reported the results of aerial monitoring after the different tests in the Castle series that was done throughout the Marshall Islands that indicated that there were significant exposures throughout the Marshall Islands.

Additionally, there was gum film data done at Kwajalein, and in fact, I think Dr. Simon, who will be testifying later, may have some additional insight on that.

But in terms of looking at the 67 tests that occurred in the Marshall Islands, there is remarkably little data in relation to the short-lived radio isotopes that were produced, particularly outside of the area commonly referred to as the Four Atolls.

Mr. INSLEE. So is there any kind of rejoinder you would have to this report on your observations of how you would conclude that I happen to be right in this rare instance? I mean what would be your response to those conclusions? Is it just that they made an error by assuming that since there was little original data, you couldn't have concluded there had been changes or what kind of response would you make?

Judge PLASMAN. Well, I think one thing that the scientists have looked at is the residual contamination that can be measured, and that tends to be the cesium-137 that has a longer half life and can be observed in the soil. But in terms of the radioactive iodines, for instance, which can be very destructive to the thyroid gland, they don't appear in the environment, and the question has been do these radioactive iodines, do they follow the pattern of deposition that you see for the radioactive cesium?

I know that there will be scientists in the next panel that can address that issue, but there is evidence from Chernobyl, for instance, that these different radioactive isotopes, cesium and radioactive iodine have quite distinct patterns of deposition so that you can't just look at the cesium as it is today and say that is what—that shows where the radioactive iodine went during the test. And from the results of this Breslin-Cassidy report, where there was aerial monitoring throughout the Marshall Islands that did indicate that there were exposures in the very southern atolls as well.

I think that NCI report, when they did their dose reconstruction work for the study that they produced for the Senate, utilized that

Breslin-Cassidy information and determined that there were exposures throughout the Marshall Islands, and as a result there were cancers that occurred throughout the Marshall Islands that resulted from the testing program.

Mr. INSLEE. Thank you.

Judge PLASMAN. Thank you, sir.

The CHAIRMAN. Mr. Abercrombie.

Mr. ABERCROMBIE. Thank you, Mr. Chairman.

Mr. Minister, thank you for a very thorough presentation, much too much to go into in my brief time, but can I refer you to a couple of instances—and I believe you were here during my original questioning, or the original panel. I believe you heard my questions to the State Department, the Section on Health at Department of Energy and Dr. Bouville with the NCI, the National Cancer Institute. You did hear those questions, did you not, and answers?

Mr. ZACKIOS. Yes, I did.

Mr. ABERCROMBIE. From the first panel, thank you. So if you will refer to page 8 of your testimony, section 7 under the Compact negotiations. You make a statement there, "Furthermore, it is disingenuous to assert that the RMI should have sought funding for some of its CCP requests as part of the recently concluded Compact renewal discussions. During those discussions the State Department made it clear to the RMI that nuclear and CCP issues would not be a part of the Compact renewal negotiations because they were to be handled separately by Congress."

As you know, I paid close attention, as did other members, including the Chairman, to those negotiations and had numerous discussions with people at State and Interior, and that is my impression as well. Do you have anything in the way of anything in writing to that point, perhaps notes or something of that nature from the discussions at that time that led you to this statement that the State Department really didn't want all of that put into the Compact negotiations but reserved that either for the changed circumstances or separate activity by the Congress?

Mr. ZACKIOS. Yes, Congressman, and there is a letter to myself dated March 27, 2002 from the then Compact negotiator, Mr. Albert Short. And I will just read a portion of—

Mr. ABERCROMBIE. Could you just read a portion, and I would ask your permission, Mr. Chairman, to enter it into the record, the entire letter.

Mr. ZACKIOS. Thank you, Congressman and thank you, Mr. Chairman.

One paragraph reads: "We cannot, however, address requests for additional assistance related to the nuclear testing program since this issue is on a separate track. It is now before Congress via the RMI's request submitted under the Changed Circumstances Provision of the agreement between United States and the RMI for implementation of the Section 177"—

Mr. ABERCROMBIE. Thank you very much. You will submit that letter?

Mr. ZACKIOS. Yes, I will, sir.

[The letter submitted for the record follows:]



## United States Department of State

Washington, D.C. 20520

March 27, 2002

Dear Mr. Minister:

Please find enclosed the United States proposal of key elements of Title II assistance under the amended Compact of Free Association between the Government of the United States and the Government of the Republic of the Marshall Islands (RMI).

In formulating our proposal, we have considered the RMI proposal presented in Honolulu in December as well as other submissions made by your side. Our proposal is a carefully considered response to the issues raised during our discussions. It is designed to assist, within our special relationship, the RMI's effort to advance self-reliance, promote public and private sector reform, and improve accountability. We are developing amended Title II language which will embody this financial proposal and we will share this document with you shortly.

We note your submissions with regard to Ebeye special needs and nuclear health care. We believe our enclosed funding formulation is sufficient to address Ebeye needs and health care for the entire Marshallese people. We cannot, however, address requests for any additional assistance related to the Nuclear Testing Program since this issue is on a separate track. It is now before Congress via the RMI's request submitted under the changed circumstances provision of the Agreement between the U.S. and the RMI for the implementation of section 177 of the Compact. We recently received a copy of a letter from

His Excellency  
Gerald Zackios,  
Minister of Foreign Affairs and Trade  
of the Republic of the Marshall Islands,  
Majuro.

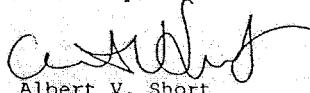
Congress to President Bush concerning the RMI's request. As a result of the Congressional letter, an interagency group will study the request and respond to Congress separately from our Compact negotiations.

The Department of Defense is actively reviewing the RMI request for a reexamination of the U.S. Government's long-term requirements at Kwajalein. While this assessment must be completed to enable us to respond fully to your request to establish a landowners trust fund, such an up-front payment would not be consistent with the Military Use and Operating Rights Agreement between our two countries. Additionally, we do not believe it is feasible for the U.S. government to pay Kwajalein compensation up front as a lump sum. Nonetheless, we will be responding more completely on this issue once the Department of Defense assessment is completed.

I look forward to meeting with you and other members of the RMI's negotiating team at a date and location suitable to us both. Should you have any questions about this proposal, please feel free to contact me.

I hope to meet with you soon.

Sincerely,



Albert V. Short  
Compact Negotiator

Attachment:

As stated.

cc: His Excellency  
Banny deBrum  
Ambassador of the Republic of the  
Marshall Islands.

Mr. ABERCROMBIE. And will you submit anything else to the Chairman that you think might also indicate that this was the position of the State Department and/or the Interior Department with regard to the issues at hand?

Mr. ZACKIOS. Yes, I think this is what I will be providing.

Mr. ABERCROMBIE. One other quick point then. Mr. Plasman, did you also hear the questions to the previous panel from me?

Judge PLASMAN. Yes, sir, but I would be hard pressed to remember every one.

Mr. ABERCROMBIE. That is OK, I will do it for you.  
[Laughter.]

The CHAIRMAN. I can give you the answers.  
[Laughter.]

Mr. ABERCROMBIE. Again, I want to emphasize too to everybody that is still here, and I certainly can speak I think for both sides of this political aisle, that we were not looking for villains here, but some people might end up being villains by default.

Dr. Bouville indicated—and you will have to take my word for this—on page 4 of his testimony, unless you happened to see it, “In the absence of registry-based baseline cancer rates for the Republic of the Marshall Islands, the NCI Surveillance, Epidemiology and End Results Program,” commonly known as the SEER program. Are you familiar with that program?

Judge PLASMAN. Only by reading of it, sir.

Mr. ABERCROMBIE. OK. But you are familiar with—the name rings something that strikes you as you know that such a program exists?

Judge PLASMAN. Yes, sir.

Mr. ABERCROMBIE. Let me read it again here. “In the absence of registry-based baseline cancer rates for the Republic of the Marshall Islands, the NCI” SEER program “rates representative of native Hawaiians were used as a surrogate.”

Is it your understanding in your role that there has never been a complete survey of the radiological damage, the extent of the radiological damage in the Marshall Islands with regard to the kinds of data that has been made available to you in your deliberations?

Judge PLASMAN. Yes, sir.

Mr. ABERCROMBIE. It is astounding to me, to tell you the truth. I hadn't really comprehended that before. Are you aware of the kinds of stories, anecdotally or perhaps in direct testimony, to you or to your knowledge of, on the day, for example, of the BRAVO test, of chunks of ash settling all over the islands, in the ocean, children even and perhaps adults, older adults, picking up the ash and eating it, some people even thinking it had been sent by God, that it was manna from heaven in a biblical sense, and that people actually tasted the ash and that it was extensively distributed throughout the Marshalls?

Judge PLASMAN. Yes, sir, we have received testimony to that effect, although the extent of it throughout the Marshall Islands I don't believe I have heard testimony that there has been heavy fallout in the southern atolls, but certainly in the northern atolls we received testimony that this type of—

Mr. ABERCROMBIE. The ash fell in the ocean, did it not?

Judge PLASMAN. Yes, sir.

Mr. ABERCROMBIE. The ocean has currents, does it not?

Judge PLASMAN. It does, sir.

Mr. ABERCROMBIE. Do fish feed in the ocean?

Judge PLASMAN. Yes, sir.

Mr. ABERCROMBIE. In the Marshalls as it does elsewhere on the planet?

Judge PLASMAN. Yes, sir.

Mr. ABERCROMBIE. Could that fish have provided sustenance to people throughout the Marshalls?

Judge PLASMAN. It certainly could and would have, sir.

Mr. ABERCROMBIE. Last question. What is your understanding of the \$150 million associated with the 177 Agreement? Was that supposed to be, to the best of your knowledge, a final settlement or a complete number, or was it arrived at in any way that you know of that was related to specific criteria of any kind?

Judge PLASMAN. To my knowledge it was a politically derived figure that did not have reference to any quantification of damages. I think it was the role of the tribunal to make the final determination of all claims of the people of the Marshall Islands for damages from the testing program.

Mr. ABERCROMBIE. Is it your understanding that under that program that if the \$150 million proved not adequate, that provision was made, as was indicated by the gentleman, Mr. Krawitz from the State Department, that the Congress had not only the capacity but could be expected to have a request made of it for additional funds?

Judge PLASMAN. Yes, sir, if there were changed circumstances.

Mr. ABERCROMBIE. Thank you.

The CHAIRMAN. Ms. Watson.

Ms. WATSON. Thank you, Mr. Chairman.

I just want to follow up on something my colleague, Mr. Abercrombie, has asked. Because of the currents that flow south down toward the equator, were you aware that there were instances of cancer developing particularly in women? I was down in Pohnpei and we went over the Kosrae and we had reports from our two American doctors there at the hospital that women were coming in with cancer of the breast where the nipple starts. It starts there and it moves, and the breast becomes extended, and it was an alien type—that is the word they used—an alien type cancer.

We had a biologist, a microbiologist explaining the currents in the ocean and how—and I mentioned this before—but how the fallout got into the sea life. And since people live off the sea life that it seemed as if the cancer was generated from the fallout. What do you know about that?

And I mentioned before that the complaints that we heard at the tribunal were relative to other generations. You know, it might not have manifested itself in that generation in the '40s and the '50s but certainly they saw it later on, those born in the '60s and '70s and so on. What do you know about that?

Judge PLASMAN. Well, Representative Watson, I want to also express my appreciation for your attendance at the tribunal hearing when you were in Majuro. Thank you very much.

Ms. WATSON. Yes.

Judge PLASMAN. The primary avenue of exposure for at least the people in the Marshall Islands is at this point through the food chain. During the testing period itself people were subject to fallout where they were immersed in it, they would have inhaled it or—but at this stage after the test period, you are going to find that it is through the food chain, through the—certainly fish would be part of that, but the vegetables of the atolls are going to be where a large part of that radiation dose comes from.

I mean I guess I wasn't aware of the cancer situation in Pohnpei and its relationship to the testing program in the Marshall Islands so I can't really speak to that. In terms of the inter-generational

effects, the tribunal has indeed heard much testimony from the people who were directly affected, moving testimony. I can say that the state of science at this point is not able to prove the inheritability of these radiation-related effects in human populations. There is certainly evidence that these effects exist in animals, in fruit flies, in mice. There is evidence that there is inherited chromosomal damage in humans, but the difficulty in creating a study with the numbers and the length of time generationally to be able to provide these inter-generational effects to the satisfaction of the scientists using their statistical methods is very cumbersome.

I think some reference was made in the previous panel that these types of studies are going on in Japan in relation to the atomic bomb survivors, but I certainly will endorse your comment that the tribunal heard extensive testimony on these types of effects in the Utrik case.

Ms. WATSON. Just in following up, I was very impressed and compelled at the request for additional funding because many of the islands that they returned to were not thoroughly cleaned up as yet. And as you know in the testimony people are living just on the bare land, so the environmental conditions, not only the physical conditions, because we visited some of the clinics where you go into the chamber for whatever the hours were to rid your body, if that is possible, of whatever the fallout might contain, and there were people continuously coming into those clinics, and I did not see the evidence that we have completely cleaned up the environment that they lived in on various islands. Enewetak was the, I guess, the one that really displayed a real lack of resources, and so I am trying to find—I can get my staff on this—why there was a rejection of the claim, where the claimants might have fallen short. Can you help me with that? In what areas do you feel that their claims failed to detail out what the need was?

Judge PLASMAN. Mr. Chairman, Representative Watson, in regard to the claim of the people of Enewetak, the tribunal did issue an award in a class action for the damage to property and consequential damages that they suffered. In terms of what the claim lacked, I am not sure that—I mean the tribunal made a decision based on the facts and the law that were presented the hearing and submitted in the papers. I don't believe I can really go outside the decision itself to respond to your question if we're talking about that specific case.

Ms. WATSON. I am going to send something in writing because I felt at the time—and of course we only saw a snippet as you know—that the people were certainly, should certainly be rewarded for what they had given for our testing, and I felt that their claims were legitimate, and so I would like to know what the real facts and details are, the reason why their claim was rejected for additional monies, because I felt we hadn't done a thorough job up to that point, and that was in 2001 I believe. Was that 2001?

Judge PLASMAN. 2001 or 2002.

Ms. WATSON. 2001, 2002. And this is only 2005, so they made what I thought were authentic claims. I thought their requests were legitimate and I would like to know why they were rejected. So we are going to send a letter to the various departments in

volved and see what the response is, so we might follow up with you after we get that response.

Judge PLASMAN. We'll look forward to your communication, Representative.

Ms. WATSON. Thank you so much.

Judge PLASMAN. Thank you.

Mr. ZACKIOS. Mr. Chairman?

The CHAIRMAN. Yes, sir?

Mr. ZACKIOS. If I may add to some of the answers that were provided through earlier questions by the honorable representative on reproductive abnormalities. To date in the Marshall Islands health system we have no gynecologists, no mammography unit, no oncologists, so these are some of the challenges we face in dealing with some of these issues.

And with respect to your question of other islands that are proximate to the Marshall Islands, and in particular, Kosrae, as you had mentioned. In 1994 Dr. Ratford provided testimony before this committee, and in his testimony he made some reference to that effect, and I would read some of that if I may. And he stated: Finally, I would like to share another anecdote I heard in Majuro. During the bomb testing period, exact date unknown, the people living on Kosrae Island were told one day by men from the U.S. Navy unit on the island not to eat the local food, nor drink the water.

I'll stop there. Thank you, if I answered some of your questions.

The CHAIRMAN. Thank you.

Mr. ABERCROMBIE. Could I add one thing?

The CHAIRMAN. Sure.

Mr. ABERCROMBIE. Thank you.

Mr. Minister, it is very important—you reminded me and I meant to ask you this before, again, with the—and I neglected to do it. I beg your pardon.

When we talk about health care—Mr. Krawitz isn't here. I am not trying to pick on him. I wish he was still here. But the State Department kind of indicated that this was, you know, this final settlement and all the rest of it and health care issues were there. But part of the petition of changed circumstance had to do with how to deal with secondary and tertiary care, right? You don't have those facilities. It wasn't Mr. Krawitz. I believe it was Mr. Cary from the Department of Energy said when you have serious issues, say issues of oncology, diagnosis and treatment and so on, don't you have to send people to Hawaii, to Straub?

Mr. ZACKIOS. That's correct.

Mr. ABERCROMBIE. So you don't have the facilities down there. It is not as if there are well-equipped hospitals and doctors and nurses capable.

And when you are making your settlements, do you have to take that into account, Mr. Plasman, as to what the health capabilities are of the Marshall Islands in terms of providing the health care that we are talking about?

Judge PLASMAN. Representative Abercrombie, perhaps the tribunal should be taking that into account. What the tribunal has done is to, as part of the award process, is to make a award in whatever the listed amount is, and then make referral to the 177 health program, and I am sure that—

Mr. ABERCROMBIE. Well, with your knowledge of the 177 health program, is it fair to say it is limited?

Judge PLASMAN. Yes, sir, and insufficient.

Mr. ABERCROMBIE. OK, thank you.

Ms. WATSON. Mr. Chairman, may I?

The CHAIRMAN. Yes.

Ms. WATSON. I am sorry that Representative Bordallo is not here because Guam and Hawaii both are complaining about the debt owed in their hospital system from Kosrae and some of the other islands down in Micronesia. And I do know that when I toured the hospital in Kosrae and the doctors informed me of these new cases of breast cancer, I went to the wife of the Governor and said, you know, we need mammograms here, we need people who know how to use them. There was no clue as to how to identify breast cancer. I guess when you see it, you will know it, but how to treat it, and how to prevent it and so on. But they absolutely had no knowledge, no equipment.

So I am following up on a question that Representative Abercrombie just asked. Would the 177 funds, could they be used to repay the medical expenses of people coming up from the islands—I am talking about the Micronesian islands now—but we see the flow all the way down and touching the Micronesian islands, which are only 6 degrees above the equator, so those water flows are now carrying with them, as I would consider probably still radioactive fallout. Can the fund be approached for the repayment of the debt of the treatment of people who are complaining about cancer? Can we pay the hospitals who have treated these people in Guam and in Hawaii? Anybody for that?

Mr. ZACKIOS. Thank you very much, Congresswoman. As I understand it, the Congress has allocated funds to Guam and to the State of Hawaii for Compact impact in the process of negotiations with—on a separate arrangement.

The CHAIRMAN. If I could, just to answer your question, in working with Neil and Madeleine when we were negotiating the Compact, we did include a substantial amount of money for impact to Guam and Hawaii, and that was something that we worked out with Neil and with Ms. Bordallo.

Ms. WATSON. Mr. Chairman, was that above and on top of the 150 million?

The CHAIRMAN. Yes, ma'am.

Ms. WATSON. The current request that is coming in, are they taking in account the additional funding, and are they trying to—you know, I don't know how that works. They are asking for—what is the amount that they are asking for?

The CHAIRMAN. There are different things included in that 2.3 billion.

Ms. WATSON. This is separate and apart from that?

The CHAIRMAN. Yes, it is separate and apart. And in negotiations with Mr. Minister and the Government of RMI, with Hawaii, with Guam, and other surrounding areas, we were able to work out on the Compact additional money for impact on the medical side, but that was above and beyond what has happened already. What we are dealing with the changed circumstances is kind of a separate area, separate issue that we are trying to deal with. It is 2.3 billion

total, but there are land use issues, there are medical issues, there are other things that they are saying are in addition to what we have been able to do already.

Ms. WATSON. With your environment and agricultural background, I don't know what the claims request covered, but I do know there were environmental problems, there were agricultural concerns and so on, and so I think this request is probably addressing some of those. I just don't know separate and apart, and you might want to—

The CHAIRMAN. That is what they are dealing with, and when you look at the issues that are in front of us right now in terms of the changed circumstances, the decision that we have to make are in terms of are there changed circumstances, and if so, what is the proper compensation for that? And if there are not changed circumstances, are there still liabilities or responsibilities that the U.S. Government has.

Ms. WATSON. Who is determining that, this oversight committee or the various departments?

The CHAIRMAN. It is our job.

Ms. WATSON. It is our job?

The CHAIRMAN. OK. State Department is—in defense of the State Department they were asked to respond specifically to the changed circumstances petition, so what they were testifying to was just that. If you want to ask State Department or Energy or Interior or any of the other departments do they feel like we still have additional liability, they may come back with a different answer. But when it comes to the petition, they were just testifying strictly on the petition.

Ms. WATSON. I understand.

The CHAIRMAN. I think Neil and I, I think, probably agree on a lot of this, that there are issues that we still have to take care of. It is just a matter of within the context of this petition what fits and what doesn't?

Ms. WATSON. I haven't read through everything here, and what I have in front of me are just the testimonies from the various witnesses. If we could be privy to the information that you have so that our monitoring responsibilities can be addressed, I don't have a clue as to what was worked out. I do have some idea about 177, but not what you worked out, and not what those funds would go to care for.

If you can share that with us, we can make—

The CHAIRMAN. We will definitely share with International Relations all the information that we have, absolutely.

Ms. WATSON. OK, very good.

The CHAIRMAN. I am going to dismiss this panel. Thank you very much for your testimony. I again apologize for the delay in getting to the testimony, to the question, but thank you very much. I know both of you have come a very long way to be here, and we appreciate the effort that was made. Having made that trip last year, I can testify that that is a long way to go.

[Laughter.]

Judge PLASMAN. Thank you, Mr. Chairman.

Mr. ZACKIOS. Thank you.

The CHAIRMAN. I am going to call up the third and last panel. It consists of experts with a strong background in the numerous scientific and legal issues that we confront here today. If I could have you join us. Please remain standing. If I could have you raise your right hand.

[Witnesses sworn.]

The CHAIRMAN. Thank you very much. Let the record show they all answered in the affirmative.

Now I really have to apologize to you because you guys have been waiting all day long. Thank you very much for your patience and being here.

We are going to begin with Dr. Mauro.

**STATEMENT OF JOHN MAURO, Ph.D., CHP, SENIOR VICE  
PRESIDENT, S. COHEN & ASSOCIATES, McLEAN, VIRGINIA**

Dr. MAURO. Thank you. Mr. Chairman, members of the committee, I would like to thank you for inviting me here today to speak on behalf of the people of the Marshall Islands.

I am a health physicist, and in 1998 our company, Sanford Cohen & Associates, was retained by the people of the Marshall Islands to assist them in a broad range of radiological issues, but they really come down to two essential questions. They asked us to take a look at the historical radiation exposures that were experienced by the people of the Marshall Islands due to the testing that took place, basically the exposures that occurred during and immediately following those tests, and to determine whether or not the work that was done by our Government was in fact a fair characterization of the radiological impacts that occur from those tests.

The second thing we were asked to do is to look at the current levels of residual radioactivity on the islands and determine whether or not there's a need for additional cleanup in order for the lands to be used and be in compliance with current radiation protection standards that are being used in the United States.

During the course of our work, which continued for about 5 years, we also were asked to participate in the preparation of the changed circumstances petition. So we have contributed to that.

What I would like to do in my 4 minutes that are remaining, is I'd like to basically go down the 9 items that have changed, without a doubt, over the past—since 1986, since the 177 Agreement was put in place, that have a profound effect on the costs associated with remediating this problem. I think a lot has been mentioned in many discussions, but in my mind it boils down to 9 items. Let me go through them one by one quickly.

One is in the mid '90s the Department of Energy had an openness initiative, where large amounts of classified data were declassified. When we were brought in in 1998 we had the benefit of having access to an enormous amount of data which no one had access to prior to that unless they had proper clearances. We reviewed that data in depth, and we used that data as the basis for evaluating whether or not the Government had done a good job in reconstructing the historical doses that were experienced by the people of the Marshall Islands from the weapons testing.

We concluded that the Government significantly underestimated those doses. For example, we heard today that the National Cancer

Institute reconstructed the number of cancers that have occurred and are projected to occur. Those reconstructions were based on estimates of radiation doses that were performed by the Government. We believe the Government has underestimated the doses to the whole body by about a factor of 2. In other words, the claim is that the people of Rongelap, for example, experienced 175 rem whole body exposure. We believe that the people of Rongelap, at the time of the BRAVO test, experienced something closer to 300 to 400 rem whole body exposure, and we have reasons for that, extensive scientific reasons for that.

We also believe that the thyroid dose estimates were significantly underestimated, perhaps on the order of 10 to 20 fold underestimate. So because we had that data which did not exist available to—in fact, even the researchers of the Government, when we spoke to them, they did not have access to that data. So one of the major changes was that data became available and allowed us to reassess our understanding of what those doses were.

The second thing that I'd like to mention that changed was following 1986 reports came out from what's called the Bikini Atoll Rehabilitation Committee, and also many, many reports came out from the Environmental Protection Agency, which started to quantify how much it costs to remediate radioactivity in the environment. In other words, it was detailed studies done to see what does it cost to clean this stuff up? That was not available at the time of the 177 Agreement. It became available subsequent to that agreement, and we made use of that information in order to evaluate what the cost would be to remediate the lands to a level that is currently considered to be acceptable within the United States.

The other item that changed was—and this was mentioned previously—was the risk coefficients for the risk of radiation exposure. In 1985 there was a certain understanding for every unit of radiation exposure you receive, there was a certain risk, health risk. Well, that understanding changed substantially since that time period, and we now understand that the risks per rem are substantially higher than was believed at the time of the 177 Agreement. In addition, the radiation cleanup criteria was reduced markedly. In 1986 the radiation protection criteria for members of the public and the cleanup criteria was 500 millirem per year. That has changed dramatically in the last 15 years, and today the cleanup criteria for the EPA is 15 millirem per year, and the cleanup criteria that the Nuclear Regulatory Commission uses is 25 millirem per year.

So you could see that there is a dramatic change in the regulatory structure and criteria for what constitutes as clean and acceptable. In fact, that probably goes largely to the increased cost to cleanup. In other words, instead of having to meet millirem, you need to meet 15 or 25. In our case, when we did our analysis we used 15 because that in fact was the criteria that was judged to be the applicable criteria through the tribunal.

In addition, a changed circumstance is that the tribunal has heard testimony to this effect that has reappeared as CNA appeared before the tribunal, and the tribunal has ruled on what it will take to clean up the islands to the acceptance criteria. That has all been documented. Judge Plasman has made reference to it.

I consider that, those rulings to be a changed circumstance. That information, what it would cost to clean up, was not available in 1986.

And finally, the NCI report itself I consider to be a major changed circumstance. In 1986 the understanding regarding the number of cancers that might be associated with the exposures experienced by the people of the Marshall Islands was very, very small. Now the estimate is 530, and I consider that finding, which only came out relatively recently, a substantial changed circumstance, something we did not know before.

I would like to add though, and emphasize again, that that number of 530 may turn out to be a reasonable number, but it may turn out to be a little bit low because I believe that work was done based on the Government's estimate of what was the doses that were experienced. And we believe those doses were underestimated substantially.

I think those really capture the essence of what I believe to be the heart of the changed circumstance issue.

[The prepared statement of Dr. Mauro follows:]

**Statement of John Mauro, Ph.D., CHP, Senior Vice President,  
S. Cohen & Associates**

This statement was prepared by Dr. John Mauro as an employee of S. Cohen & Associates (SC&A, Inc.) of McLean, Virginia. On October 16, 1998, SC&A was retained by the Enewetak/Ujelang Local Government Council ("the Council") of the Republic of the Marshall Islands to assist the Council with respect to radiological issues concerning the remediation, restoration, and resettlement of Enewetak Atoll. This was the beginning of a long and productive relationship with the people and the leadership of the Republic of the Marshall Islands, which continues to this day.

I am here today to help the Committee on Resources and the Committee on International Relations Subcommittee on Asia and the Pacific achieve a deeper understanding of the facts associated with several complex scientific/regulatory issues addressed in the Petition for Changed Circumstances filed by the Government of the Republic of the Marshall Islands with the President of the United States Senate and the Speaker of the United States House of Representatives on September 11, 2000 (• the Petition").

Along with Dr. Hans Behling, also with SC&A, I contributed to portions of the Petition dealing with certain scientific issues that represent a change in circumstances that must be carefully considered by the Committee. However, two reports have been prepared in support of these proceedings that take issue with many of the findings that Dr. Behling and I present in the Petition. These reports are entitled "Congressional Research Service Report for Congress," dated March 14, 2005, and a report prepared by the Administration entitled "Report Evaluating the Request of the Government of the Republic of the Marshall Islands presented to the Congress of the United States of America Regarding Changed Circumstances Arising from U.S. Nuclear Testing in the Marshall Islands pursuant to Article IX of the Nuclear Claims Settlement Approved by Congress in Public Law 99-239," dated November 2004. The purpose of my statement today is to demonstrate that many of the scientific findings and regulatory positions articulated in those reports are incomplete and/or incorrect, which brings into question the major conclusion of the Administration's report that "the Marshall Islands" request does not qualify as changed circumstances...." In the discussion that follows, I will refer to these reports as the CRS Report and the Administration's Report.

The Petition identifies a number of changed circumstances. I will limit my statement to those changed circumstances dealing with what I will refer to as "incomplete estimates of dose" associated with the BRAVO test and "changes in radiation protection and cleanup standards." I hope to demonstrate that, without a doubt, at the time of the enactment of the Compact of Free Association between the United States and the Marshall Islands, there was only a limited understanding of the extent of the health impacts of weapons testing in the Marshall Islands, nor had anyone anticipated the magnitude of the changes in the radiation protection standards and cleanup criteria that would occur over the subsequent 15 years. These two facts

have substantial cost implications that go to the very heart of the reasons why changed circumstances provisions were incorporated into Article IX of the Section 177 Settlement Agreement. The CRS Report and the Administration's Report either disagree with our position regarding these matters, avoid discussion of some of these issues, or attempt to diminish the importance of these issues. I hope to demonstrate where the CRS Report and the Administration's Report are deficient with regard to these matters and convince the Committee that there have been substantial changed circumstances due to incomplete estimates of dose and changes in radiation protection and cleanup criteria.

#### Incomplete Estimates of Dose

SC&A has prepared three reports on behalf of the People of the Marshall Islands that describe in detail the historical doses associated with weapons testing in the Marshall Islands (SC&A 2000a;

SC&A 2002a; and SC&A 2002b). Using many of the same historical reports and records compiled and used by the Atomic Energy Commission (AEC) and the Department of Energy (DOE) and its contractors, along with a large number of reports that were only recently declassified at that time, we derived doses to the people of the Northern Atolls associated with the BRAVO test that are significantly higher than those derived by the government and its contractors. Specifically, we believe that the whole-body doses associated with the BRAVO test were about two times higher, that the thyroid doses were many times higher, and that the previous dose reconstructions neglected to consider the very large doses that were delivered to the lining of the gastrointestinal tract due to the ingestion of short-lived radionuclides immediately following the test.

With respect to whole-body dose, the following is a reproduction of Table 1 (page 24) of the Administration's Report:

Table 1. Comparison of Whole-Body Dose (rad) from BRAVO fallout by various reports and investigators.

Location	Sondhaus and Bond (1955)	Breslin and Cassidy (1955)	JCAE (1957)	Peterson (1981)	Lessard (1985)	Behling et al. (2000)
Rongelap	175	180 R	170	110	190	410
Ailinginae	69	60 R	75	24	110	215

The estimates by Breslin and Cassidy are either in roentgen (R) or dose to air (r); estimates in whole body dose (rad) would be approximately 0.88 times the reported value.

In coming to its conclusions regarding who is right and who is wrong, the Administration's Report simply states that "the weight of expert opinion remains in favor of an average external dose about one half those estimated by Behling." The fact is that all of the authors, except Behling et al., made certain assumptions or neglected certain exposure pathways that either missed important doses or neglected to give the benefit of the doubt to the people of the Marshall Islands. Specifically, the other studies neglected the dose from the passing plume, neglected the whole-body dose from fallout that deposited directly on the persons' skin and clothing, did not consider the unique exposure geometry associated with fallout, and made assumptions regarding the time of arrival of the plume and the duration of fallout that did not give the benefit of the doubt to the people of the Marshall Islands. These oversights and errors are discussed in detail in the SC&A reports. However, the most egregious error made by the other authors is that they all neglected the hematological clinical data collected from Rongelap evacuees that showed that the whole-body doses were, more likely than not, about twice the values estimated by the government and its contractors. The authors of the CRS Report and the Administration's report do not even attempt to address these critical facts.

SC&A 2002a and 2002c reviewed the clinical and hematological data reported by the U.S. physicians who attended the exposed population groups of Rongelap, Ailinginae, and Utirik as the most informative data for dose estimates. The results of these reviews are critical of the dose reconstructions performed by the government, as the following paragraphs explain.

In instances when radiation dosimetry is unavailable, many investigators have used the clinical hematological dose-response as a biological dosimeter that may then be used as a prognostic tool. The medical team at Kwajalein stated their concurrence regarding the dosimetric value of clinical hematological data in the following statements (Cronkite et al. 1956):

Since it is generally agreed that the degree of change in the formed elements of the blood is the most useful clinical index of the severity of radiation damage, peripheral blood changes were relied upon as a major aid in evaluating the degree of

radiation injury in each exposed individual. In addition, changes in the mean blood counts of the exposed groups were followed closely to aid in evaluating the changing status and probable prognosis of the exposed groups...

Clinical changes that develop in the blood following acute exposure are most evident in select cells that include lymphocytes, neutrophils, and platelets. Among persons exposed on Rongelap, 42, or approximately 50% of exposed individuals, had neutrophil counts below 2,000 at some time during the observation period, and 10% had counts below 1,000. In their report, Cronkite et al. (1956) concluded the following:

Some indications of severity of exposure can be gleaned from a comparison of minimum individual counts in Japanese groups in which fatalities occurred. In general, a significant number of deaths was encountered only in individuals whose neutrophile count fell below 1000...

...By this criteria, then, the effective dose received by the Rongelap people approached the lethal range.\*

On the basis of these conclusions, Cronkite et al. (1956) also had doubts about the accuracy of the assigned dose, as given in the following statements:

The high initial incidence of nausea, vomiting and diarrhea in the high-exposure Marshallese group, and the profound neutrophile and platelet count depression indicated a greater effect that might have been expected from 175 R...As indicated in Chapter IV...and from the degree of leukocyte depression it is possible to estimate the dose at which a small incidence of mortality would have resulted without treatment. [Emphasis added.]

In summary, SC&A's revised estimated dose of approximately 400 R to the maximally exposed Group 1 Rongelapese is, therefore, fully consistent with the opinions expressed by the medical doctors who treated the BRAVO-exposed population groups. In addition to the above-stated benefit of medical intervention, perhaps a more compelling reason that explains the absence of mortality is the fact that the exposure experienced from fallout was not instantaneous but corresponded to a protracted exposure period of more than two days. Animal studies have shown that under similar protracted exposure conditions, the mid-lethal dose is increased to between 550 to 650 R.

With respect to the doses to the thyroid gland, the disagreement between the SC&A reports and the reports prepared by the government and its contractors is equally profound. The CRS Report and Administration's Report address the follow-up clinical investigations of the incidence of thyroid cancer in the Marshall Islands, but are silent on the validity of SC&A's position regarding the thyroid doses experienced by the people of the northern atolls following the BRAVO test. Using the same data compiled by government contractors, SC&A has determined that the various government reports significantly underestimated the doses to the thyroid gland. The underestimates are due to (1) neglecting extensive evidence that, due to relatively low amounts of stable iodine in their diets, the uptake of radioiodine by the people of the Marshall Islands is likely to have been several times higher than assumed by the government, (2) neglecting evidence that the size of the thyroid gland of the people of the Marshall Islands is smaller than assumed by the government, (3) failure to properly account for the daily urinary volume excretion fractions in deriving radioiodine intakes, (4) failure to account for thyroid dose due to skin contamination, (5) underestimate of the whole-body dose, which contributes to the thyroid dose, and (6) failure to give the benefit of the doubt to the Rongelap evacuees regarding questions pertaining to the time urine samples were collected and the time radioisotopic analysis of urine was performed. As is the case for whole-body exposures, the final proof that the thyroid gland doses were significantly underestimated by the government comes from clinical data that demonstrate that, in order for the people of Rongelap to have experienced the amount of thyroid damage observed, the radiation doses to the thyroid gland had to have been much higher than those estimated by the government. In fact, the BEIR III and BIER V Committees (NAS 1980 and 1990), the National Academy of Sciences (DCPA 1973) and others (Larsen et al. 1978, Conrad and Bustad at 1969 Conference) expressed disbelief that such severe thyroid disorders could have resulted from the relatively low thyroid doses estimated by the government. It was not until the investigations reported in SC&A 2000a and 2002a that the reasons behind these apparent incongruities between the government's reconstructed thyroid doses and the observed clinical effects on the thyroid glands of the people of the northern atolls were explained.

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\* Note: When the radiation dose is instantaneous (as was the case for Japanese A-bomb victims) or is delivered in a very short time period, a mid-lethal dose of about 450 R is generally assumed.

There were many other oversights in the government's reports related to internal doses from the ingestion of radionuclides that are described in SC&A 2002 a and b. However, by far, the greatest of these oversights was neglecting the dose to the intestinal mucosa from short-lived, highly insoluble radionuclides that were ingested by the people of Rongelap immediately following the arrival of the BRAVO plume and prior to their evacuation. We estimated that the doses to the intestinal mucosa were hundreds of rem. These dose estimates were recently confirmed in a paper by Moeller and Sun 2002. This issue is not mentioned in the CRS Report or the Administration's Report.

What does all this mean with regard to changed circumstances? In my opinion, it means that many errors and oversights were made by the government in assessing the health impacts of weapons testing at the time of the Section 177 Settlement Agreement. As such, explicit consideration must be given to this new information in achieving an equitable resolution regarding this aspect of the Petition.

#### **Changes in Radiation Protection and Cleanup Standards**

SC&A has prepared a number of reports addressing the cleanup needs and associated costs for several of the northern atolls, including Enewetak (SC&A 1999a), Bikini (SC&A 1999b), Rongelap (SC&A 2000b), and Utrik (SC&A 2002c). These reports were litigated before the Nuclear Claims Tribunal and some have been ruled upon by the Tribunal.<sup>\*\*</sup>

SC&A's reports included the following:

An evaluation of the potential radiation doses and radiological health risks to the current populations on the atolls and the populations that may resettle many of the atolls in the future due to residual contamination in the soil, food, and water on the atolls. The results of the evaluations were compared to the radiation protection criteria used in the U.S. for cleanup of sites contaminated with radioactive material, and adopted by the Nuclear Claims Tribunal for use by the Republic of the Marshall Islands; and

An evaluation of the costs associated with the remediation of the islands to the U.S. cleanup criteria using a broad range of alternative strategies. The evaluations included recommended remediation strategies for each atoll and their associated costs.

The results of these recommendations represent a changed circumstance because the cleanup criteria and cleanup costs determined by SC&A and ruled upon by the Tribunal were not adequately understood at the time of the Section 177 Settlement Agreement. Hence, by definition, the rulings of the Nuclear Claims Tribunal can be considered a changed circumstance.

The CRS Report and the Administration's Report take exception to SC&A's findings and recommendations, and the rulings of the Nuclear Claims Tribunal, for reasons that I believe are not related to scientific issues, but are more appropriately categorized as regulatory issues. I believe the authors of the CRS Report and the Administration's Report would agree with the radiological data we used in our analyses, because the data were compiled by government contractors and have undergone extensive quality assurance and peer review. I believe the authors of the CRS Report and the Administration's Report would also agree with the methods employed in our reports for performing cost analyses of alternative cleanup strategies, because the unit costs that we used were based on data and reports prepared by the Bikini Atoll Rehabilitation Committee (BARC), which was established at the request of Congress (House Report 99-450) to report independently on the feasibility and cost of rehabilitating Bikini Atoll. I also believe that, if the authors of the CRS Report and the Administration's Report agreed that the regulations and guidance promulgated by the U.S. Environmental Protection Agency are applicable to cleanup decision-making in the Marshall Islands, they would agree with the results and conclusions of our work and the findings of the Tribunal. However, throughout the CRS Report and the Administration's Report, the authors take exception to the use of EPA criteria and guidance as the basis for cleanup decision-making in the Marshall Islands. Therefore, this is a matter that is more appropriately addressed by the Nuclear Claims Tribunal. However, in my opinion, if the Marshall Islands were a State within the U.S., there is little doubt that cleanup of the northern atolls would

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<sup>\*\*</sup> It is noteworthy that none of these reports are cited in either the CRS Report or the Administration's Report. It is also important to note that our work would not have been possible without the excellent work and incredible amount of data compiled by Lawrence Livermore National Laboratory (LLNL) under the direction of Dr. William Robison, and by the Nationwide Radiological Study (NWRs), under the direction of Dr. Steven Simon. We have reviewed their work in detail, performed independent walk-over surveys of many of the islands on several atolls, collected and analyzed samples of soil and food on Utrik and Ailuk, and have come up with virtually identical results.

be required to meet the same criteria that are used to clean up sites contaminated with radioactive material in the U.S.

Notwithstanding one's opinion regarding the appropriate criteria and methodologies that should be employed in determining the types and costs of cleanup of the current levels of residual radioactivity in the Marshall Islands, there is absolutely no doubt that the regulations governing radiation protection of the public and the criteria for cleanup of sites contaminated with radioactive material in the United States have changed dramatically since the Section 177 Settlement Agreement was established. Rather than repeat these changes here, I would refer the Committee to Appendix D of the Petition.

In conclusion, it is noteworthy that the amount of radioactive material in soil, food, and water of the Marshall Islands has not increased since the establishment of the Section 177 Settlement Agreement. In fact, the amount of radioactive material in the environment has declined somewhat due to primarily radioactive decay. However, since the establishment of the Section 177 Settlement Agreement, we have gained a more complete understanding of the radiation exposures and potential health impacts that were experienced by the people of the Marshall Islands due to weapons testing. These exposures and their potential health consequences are much larger than previously believed. In addition, subsequent to the establishment of the Section 177 Settlement Agreement, the radiation protection standards for members of the public and the cleanup criteria for sites contaminated with radioactive material changed dramatically. The standards are a lot more protective now than they were at the time of the Agreement. I believe that these represent changed circumstances that could have a direct bearing on the cost of medical care and certainly greatly increase the cost of remediation.

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**Response to questions submitted for the record by John Mauro, Ph.D.,  
CHP, Senior Vice President, S. Cohen & Associates**

**Questions Submitted by Chairman Richard W. Pombo:**

**Question 1: If the dose estimates cited by you are correct, how many more cancers might be expected above the 530 cited by the National Cancer Institute? Would this increase in potential cancers significantly change the total compensation awarded or future awards?**

*Response:*

As I understand the 177 Agreement, a certain amount of funds were granted to the Republic of the Marshall Islands to be used to compensate claimants with certain presumptive cancers. The available funding to compensate claimants is rapidly being exhausted, and many claimants have not received full compensation. At the time of the 177 Agreement, there was insufficient knowledge to predict the number of cancers that had occurred to date or may occur in the future due to radiation exposures associated with weapons testing. As a result of investigations performed by the National Cancer Institute and work performed by Sanford Cohen & Associates, we now have a much better idea of the total number cancers that may be experienced by the people of the Marshall Islands due to weapons testing. The estimate made by the National Cancer Institute appears to have been based on historical studies that we believe underestimated the doses to the whole body (by about a factor of 2), to the thyroid gland (by about a factor of 10 to 20), and disregarded the doses to the gastrointestinal tract and other internal organs. If the National Cancer Institute took into consideration the possibility that the doses upon which their estimate of cancers were based may have been too low, they would have derived higher estimates of the number of cancers. I suspect that, had the NCI used dose estimates that were more in accord with SC&A's findings, NCI would have estimated perhaps twice as many cancers.

Under the current compensation program, all individuals with specified cancers are supposed to be compensated. Accordingly, in theory, the total amount of compensation would not change no matter the number of projected cancers, since compensation decisions are supposed to be based on the existence of real cancers and not anticipated cancers. However, the total amount of compensation is likely to be substantially greater than previously anticipated in light of the recent investigations performed by NCI and SC&A.

**Question 2: Which criteria for cleanup have changed in the U.S. since the Compact's enactment in 1986, and how would those criteria apply to the cleanup of the RMI if it were part of the U.S.?**

*Response:*

Since 1986, the overall radiation protection standards for members of the general public in the U.S. have decreased from 500 mrem/yr to 100 mrem/yr. However, more importantly, the cleanup criteria for sites contaminated with radioactive material have decreased from 500 mrem/yr to 15 mrem/yr. The cleanup criterion of 15 mrem/yr is based on EPA standards currently being used to cleanup sites on the National Priorities List, including DOE facilities. It is my opinion that, if the Marshall Islands were a state in the United States, EPA would require cleanup of the contaminated atolls to levels corresponding to 15 mrem/yr for those individuals that

have a high potential for exposure, such as individuals whose diet consists predominantly of locally grown foods.

**Question 3: A particular request in the RMI Petition relates to "safely containing radiation" which would seem to imply the living conditions near Runit Dome. Can you tell the Committee about this facility and if continued adverse effects exist from its existence?**

*Response:*

Large quantities of radioactive material associated with the cleanup of Enewetak Atoll are contained in Runit Dome. However, the amount of radioactive material inside the dome is small compared to the amount of radioactive material that is contained within the bottom sediments of the lagoon. Hence, even if Runit Dome failed and all its radionuclides were released and deposited in the sediment in the lagoon, there would not be a substantial increase in the radionuclide inventory in the lagoon. However, if Runit Dome failed and released its inventory of radionuclides, those radionuclides would not be immediately transferred and buried in the bottom sediment. They would first be dispersed in the water and gradually settle to the bottom of the lagoon. During this in-transit time period, the water in the lagoon in the vicinity of Runit Dome would become heavily contaminated. The outcome would be an increase in the radiation exposures to people who harvest fish and shellfish as part of their diet. The extent of the additional exposures has not yet been determined.

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The CHAIRMAN. Thank you.  
Dr. Simon.

**STATEMENT OF STEVEN L. SIMON, Ph.D.,  
REPRESENTING HIMSELF, WASHINGTON, D.C.**

Dr. SIMON. Thank you, Mr. Chairman. If you would indulge me one word outside of my presentation, I'd like to say yokwe to the Marshallese that are here today. I know most of them and I haven't seen them in about 10 years, so I would like to say hello to them.

Thank you for your invitation to appear before the Joint Committee today. I'm Steven L. Simon, Ph.D. I am presently employed by the National Cancer Institute, National Institutes of Health, but I am here today solely in a personal capacity. I am only representing myself. My statements today have not been prepared or reviewed by my present employer, nor have they been reviewed there. Hence, this statement does not represent their opinion.

I will begin with some relevant credentials. In addition to a Ph.D. in Radiological Health Sciences, I have about 28 years experience in the field of radiation and medicine, radiation epidemiology and radiation protection. I was employed by the Government of the Marshall Islands from early 1990 through mid 1995 as the sole radiation scientist in residence. In that position I directed the Marshall Islands' Nationwide Radiological Study, funded under Section 177 of the Compact of Free Association, from its inception through its completion, and I designed and oversaw the construction of the first permanently based radiological measurements laboratory in the Marshall Islands. I was also a member of the 3-person Scientific Management Team for the U.S. funded Rongelap Resettlement Project, and I was Director of the Nationwide Thyroid Disease Study in the Marshall Islands as well.

Since then I directed the radiological survey of Johnson Island. That was the site that Mr. Abercrombie saw the nuclear test detonated from.

In addition, I have been on the International Atomic Energy Agency surveys of nuclear test sites in Algeria and in French Polynesia.

I have an extensive publication resume, and have authored 18 peer-reviewed papers, 19 book chapters and one book, all on issues related to radiation in the Marshall Islands.

The purpose of this testimony is to clarify what I believe are the seminal findings of the Nationwide Radiological Study and the Nationwide Thyroid Disease Study, two studies that I directed.

First let me say that I'm pleased to see the findings of these studies being considered in this hearing. To me this validates the most important characteristic of those studies. They were scientific in nature, objective in their conclusions, and they were designed and conducted without political purpose in mind.

In passing, I would like to note that in early 1995 the Parliament, the Nitijela of the Marshall Islands, enacted a resolution to formally reject the findings of the Nationwide Radiological Study they had sponsored.

The primary goal of that study was to document the geographic distribution of residual radioactivity from nuclear testing conducted at Bikini and Enewetak, and to assess the present and future levels of residual radioactivity. We were very successful in doing that. The findings were judged to be valid by three international expert panels including one appointed by the RMI Government.

Despite that there are over 1,000 islands of varying size in RMI, there's not a single island larger than a bare sandbar where at least one radiation measurement was not made, and while larger islands in the 29 atolls received dozens of radiation measurements.

I would like to refer to Figure 1, please. Here it shows the maximum observed cesium-137 measured in soil by our study at each atoll. Cesium is a marker of radioactive fallout. It has a half life of 30 years.

The study found that at atolls located south of 9 degrees latitude, they had nearly the same level of residual activity, and that it was at a level indistinguishable from that deposited in global fallout in the mid Pacific region. In the study's report I reported there were 10 atolls for which we could not conclusively determine whether they had received local fallout. The Nuclear Claims Tribunal interpreted that to be a failing as a result of inadequate funding of the study. That's not the interpretation that was intended, nor was it a failing. The intended interpretation was the following.

If there is any locally produced fallout contamination at those locations today, it is very, very small, so small in fact that it's impossible to distinguish it from global fallout that originated at nuclear test sites elsewhere in the world. Our inability to detect any excess fallout was a result of the very small amount likely to have been deposited there.

At atolls north of 9 degrees latitude, we observed an increase in the maximum level of cesium, and it reached a maximum value on the northern end of Rongelap Atoll, on Bikini Island, and on the north end of Enewetak Atoll. The observable increase above the global background at two atolls between 9 and 10 degrees north, that is Erikub, which is uninhabited, and Wotje, this can be consid-

ered to be new information, although it is consistent with the 1995 AEC report referred to here today.

Atolls located north of Wotje were included in the 1978 Department of Energy sponsored aerial radiological survey. The Nationwide Radiological Study sponsored by the RMI did not—the findings did not appreciably differ from the DOE measurements. Hence, significant new information about the contamination of the northern atolls was not obtained, except that we did validate the DOE measurements and we learned much more detail about the contamination at Rongelap during the course of the Rongelap resettlement project.

These findings have implications for future radiation protection requirements, but I will refer you to my written statement due to lack of time.

If you will allow me, I would briefly like to turn to the Nationwide Thyroid Disease Study that I directed in collaboration with medical specialists from England and Japan.

Studies elsewhere indicate that exposure to radioactive iodine at young ages can be responsible for an increase in thyroid cancer and possibly benign nodules. In addition to aiming to provide a public health service by providing free thyroid examinations, we set out to examine the hypothesis put forth by Hamilton et al. concerning the prevalence of thyroid nodules among those born before the 1954 BRAVO test. His finding was that prevalence of nodules decreased with increasing distance from Bikini. His interpretation was that exposure to radioiodines was likely much broader than believed prior to his publication in 1987.

Our study examined 4,762 Marshallese born before the end of the nuclear testing, about twice as many as did the Hamilton study. Our examinations used palpation, which is feeling of the neck, as did Hamilton, and in addition, we used high resolution ultrasound. We found a relatively high frequency of benign nodules and thyroid cancer consistent with many observations by other investigators on many islands throughout the Pacific. In fact, the scientific literature indicates that the highest observed prevalence of thyroid cancer in the world is found at locations in the Pacific where there is no evidence of exposure to radioactive iodine.

Interestingly, the observations of the thyroid study did not confirm the observations of Hamilton. That is, we did not find a significant decrease in nodule prevalence with increasing distance even though we have confirmed that contamination does decrease at increasing distance, as evidenced by this plot.

I would like to note here that although our study did not confirm Hamilton's hypothesis, it did not disprove it. However, replication of scientific findings is considered part of the gold standard in scientific research, and our study that was larger and used more sensitive techniques to detect nodules, could not replicate those findings.

Due to time limitations, this concludes my statement. I hope you found this information to be useful. I will be pleased to answer your questions.

[The prepared statement of Dr. Simon follows:]

**Statement of Steven L. Simon, Ph.D., Washington, D.C.**

Thank you, Mr. Pombo, for your invitation to appear before the joint Committees today. I am Steven L. Simon, Ph.D.. I am employed by the National Cancer Institute, National Institutes of Health (NIH), but I am here today solely in a personal capacity. I am only representing myself. My statement today has not been prepared or influenced by my present employer, nor has it been reviewed at the NIH. Hence, this statement does not necessarily represent the opinion of the NIH. I request that my statement be entered into the record.

I would first like to present my credentials. In addition to a B.S. and M.S. degree in Physics and Radiological Physics, respectively, and a Ph.D. in Radiological Health Sciences, I have approximately 28 years experience in the field of radiation epidemiology, radiation treatment of cancer, and radiation protection. My primary fields of expertise are radiation measurement and radiation dosimetry. I was employed by the Government of the Marshall Islands from early 1990 through mid-1995 as the sole radiation scientist in residence in the RMI. In that position, I directed the Marshall Islands Nationwide Radiological Study from its inception through its completion and designed and oversaw the construction of the first permanently based radiological measurements laboratory in the Marshall Islands. During that time, I was also a member of the 3-person scientific management team for the U.S.-funded Rongelap Resettlement Project and was director of the Nationwide Thyroid Disease Study. Since leaving the RMI, I directed the radiological survey of Johnston Island, another U.S. Pacific nuclear test site. I was a member of the International Atomic Energy Agency (IAEA) survey teams of the French nuclear test sites in Algeria and in French Polynesia. I was the lead dosimetrist in the well known epidemiologic studies of downwinders conducted by the University of Utah and am presently the lead dosimetrist in the NCI's current study of thyroid disease in areas adjacent to the former Soviet nuclear test site in Kazakhstan. I formerly have had research and academic faculty appointments at the University of New Mexico, University of Utah, and University of North Carolina at Chapel Hill. Presently, I hold adjunct faculty appointments at Colorado State University and Baylor College of Medicine. I am an elected member of the National Council on Radiation Protection and Measurements, I am a member of the editorial board of Health Physics, the most prestigious journal in this country in the field of radiation protection and have been on that editorial board for the last 13 years. I have an extensive publication resume and have authored 18 peer-reviewed papers, 19 reports or book chapters and 1 book, all on issues related to radiation in the Marshall Islands.

The purpose of my testimony is to clarify what I believe are the seminal findings of the Nationwide Radiological Study and the Nationwide Thyroid Disease Study, two studies I directed. First, let me say that I am pleased to see the findings of the Nationwide Radiological Study (NWRS) being considered in this hearing even though they are being cited by the U.S. Government and the RMI Government in support of differing views. To me, this validates the most important characteristic of that study: that it was scientific in nature, objective in its conclusions, and that it was designed and conducted without any political purposes in mind.

Despite my gratification at seeing the recognition of the NWRS data, I am surprised to see that now, more than 10 years after the studies were completed, the RMI Government, for the first time, publicly recognizes the data. In early 1995, following the completion of the studies I directed, the Nitijela (parliament) of the Marshall Islands invited me to present the findings to them while they were in session, but upon arriving at their chambers on more than one occasion, they never actually allowed me to make the presentation. Near to that time, Mr. Bill Graham of the Nuclear Claims Tribunal provided in-person oral testimony to the Nitijela and his comments served to discredit the study. Following his statement, the Nitijela enacted a resolution to formally reject the findings of the NWRS. Neither the Nuclear Claims Tribunal website nor the RMI Embassy website has acknowledged the study or made its findings available.

Findings of publicly funded scientific investigations should be published and the information made available. To that end, I went to great effort to publish the findings of the NWRS without any salary or financial support. In 1997, I was one of two appointed editors of a special issue of the journal, Health Physics, completely devoted to the radiological consequences in the Marshall Islands. The issue included 23 papers by 60 authors in addition to me. The Marshall Islands Government, for reasons never apparent to me, tried to stop publication of that issue. This issue has been available in its entirety on the internet [1] since a short time after publication, courtesy of Health Physics and the Department of Energy. In addition, I have made the summary report of the NWRS available for the last 8 years online [2], courtesy of the Baylor College of Medicine that maintains the website.

The primary goal of the NWRS was to document the geographic distribution of residual radioactivity from the nuclear testing conducted in Bikini and Enewetak and to assess the present and future levels of residual radioactivity. The NWRS was extremely successful in doing that [3, 4]. In addition to being published in the scientific peer reviewed literature, the data was reviewed either in its entirety or in parts, by three expert international groups, including the RMI Government appointed Scientific Advisory Panel and the IAEA panel to review the radiological situation of Bikini atoll. There has not been a single scientifically based challenge to its quantitative findings or to its degree of comprehensiveness. Despite that there are over 1,000 islands of varying size in the RMI; there is not a single island larger than a bare sandbar where at least one radiation measurement was not made. Moreover, the largest and most important islands in the 29 atolls were the sites of dozens of radiation measurements. Any claim made, that there might still be unidentified hotspots, is unlikely to be true due to comprehensive sampling based on the relative land area of each atoll and the typical variability of measurements, and use of systematic grid-based sampling plans. I make the claim, that if one could find a location with higher radiation level than was recorded by the NWRS, it would be of inconsequentially small size.

One of our areas of emphasis was measurement of Cesium-137 (Cs-137) in the terrestrial environment, e.g., soil, fruits, etc. Cs-137 has been measured worldwide as a marker of fallout contamination since it is only produced by nuclear fission. It has a 30-year half-life and it is conveniently detected by modern instruments. The NWRS documented the average as well as the range of contamination at all atolls of the Marshall Islands, even those islands and atolls traditionally uninhabited. We measured all other detectable gamma emitting radionuclides as well, though, in general, they are of little interest so many years after testing. In addition, we measured fallout plutonium in soil. Cs-137 was detectable at all atolls, but this is hardly surprising since it is detectable virtually anywhere in the world as a consequence of fallout from atmospheric nuclear tests conducted throughout the world. We compared the measured levels of Cs-137 to the value expected in the mid-Pacific region from the deposition of global fallout to discern the atolls where locally produced fallout was in excess of the background from global fallout. At this point, I would now like to refer to Fig. 1 which presents the measurements of Cs-137 in soil from the NWRS, ordered from left to right by the highest observed value at each atoll. The light yellow horizontal band represents the range of values of Cs-137 (as of 1994) deposited in this region of the Pacific from global fallout. You will also note that the vertical scale is logarithmic, meaning that each major horizontal line is 10-fold greater than the horizontal line below it.

The NWRS study found that atolls located south of nine degrees north latitude had nearly the same levels of residual fallout activity and that it was at a level indistinguishable from that expected from global fallout. In the study's summary report to the RMI Government, I reported that there were 10 atolls for which the study could not conclusively determine whether they had received fallout from the tests conducted in the Marshall Islands. I later learned from a public statement by the now-deceased NCT Chairman, Oscar de Brum, that the NCT interpreted that to be a failing of the study as a result of inadequate funding. That is not the interpretation that was intended, nor was it a failing of any kind. The intended interpretation was the following: if there is any locally produced fallout contamination at those locations, it is very, very small—so small, in fact, that it is indistinguishable from the global fallout that originated from nuclear testing worldwide. Our inability to detect any excess fallout was a result of the diminutive amount of local fallout deposited there. Here, it should be noted that we did not use crude instruments that lacked sensitivity. Our measurements relied on gamma spectrometry with liquid-nitrogen cooled high-purity germanium detectors. These devices represent, even today, the state-of-the-art gamma radiation detection instrument.

At locations north of 9° north latitude, we observed a moderately smooth increase in the average and maximum level of Cs-137 measured and it reached a maximum value on the northern end of Rongelap Atoll, on Bikini Island, and the north end of Enewetak Atoll. That there was a uniform degree of contamination at latitudes south of 9° N, and that it was about the same magnitude as that from global fallout may not have been a surprise to some knowledgeable scientists, though in all honesty, I did not have preconceived expectations since there were few historical measurements on which to base an a priori opinion. The observable increase in residual fallout activity above the global background level, at latitudes between 9° and 10° north (i.e., at Erikub [uninhabited] and at Wotje) can be considered to be new information, though one could have deduced it from the 1955 AEC report [5] following the CASTLE series of tests. Atolls located north of Wotje (latitude of 9.5° N) were included in the 1978 Department of Energy (DOE)-sponsored aerial radiological sur-

vey. Since the NWRS measurements did not appreciably differ from the DOE measurements (except at the lowest contamination levels where the NWRS had somewhat greater sensitivity [6]), there was not a great deal of new information for the northern atolls obtained, except that the DOE measurements were validated, and much more detail about the contamination at Rongelap was obtained during the course of the Rongelap Resettlement Project. But the fact that residual fallout contamination increased north of Wotho to a maximum at Bikini, northern Enewetak and northern Rongelap, had been documented in the DOE survey of 1978.

Before moving on, I would like to comment on the relationship of the NWRS data to estimating past radiation doses, as well as the value of dose estimation to the changed circumstance petition. In my view, the data obtained in the NWRS, supplemented with other information, can be used for estimating past radiation doses with the understanding that individual estimation is highly uncertain. It is also my view, however, that estimates of radiation dose, new or old, while not totally irrelevant, are not terribly pertinent to the discussion of changed circumstances. My reasoning is two-fold. First, the compensation plan, as developed by the NCT, has no criterion for admissibility based on radiation dose. That makes dose, largely irrelevant from their standpoint. Second, the radiation-related cancer burden for the nation as a whole is likely to be relatively small compared to that from naturally occurring cancers. Hence, a well budgeted compensation plan of the sort implemented by the NCT would primarily need to plan to pay for naturally occurring cancers. The number of radiation related cases that can only be predicted from dose adds only a modest increment.

Now let me briefly address what the measurements of the NWRS imply in terms of future radiation protection requirements. First, it should be realized that measurement of any amount of fallout radioactivity should not be cause for alarm; everyone in the world lives with it today. As a comparison, here in Washington, DC, the amount of Cs-137 per unit area of ground that is attributed to global nuclear testing, is about five-times that in the Marshall Islands [7].

The data of the NWRS was translated into terms of annual whole-body external effective dose and into annual external plus internal dose assuming that Marshallese eat a diet of 75% locally grown food, a scenario that is unlikely today for most Marshallese. The external dose is received from gamma rays emitted from fallout that is still in the soil, while the total dose calculation includes the dose from Cs-137 that would be ingested from fruits that can absorb Cs-137 from the soil via plant roots.

The external annual effective dose could exceed 100 mrem per year at only a few locations: on northern Enewetak Atoll, northern Rongelap Atoll, and on some islands of Bikini Atoll. The value of 100 mrem per year is accepted internationally as guidance for limiting exposure to the public. It is about equal, for example, to the amount of radiation we receive in the U.S. from natural terrestrial and cosmic ray radiation. These findings are not different than predicted from the 1978 DOE-sponsored aerial survey of the Marshall Islands.

Including the dose contribution from ingestion of Cs-137 in locally grown foods might lead to annual effective doses in 1994 (though would be 22% lower today due to radiological decay) in excess of 100 mrem per year on Rongerik, Enjebi Island of Enewetak, northern Rongelap, and Bikini Island. These findings do not differ from findings available from the 1978 DOE survey except possibly in assuming a diet so highly reliant on local food. These various findings are the basis of the statements by the NWRS and its Scientific Advisory Panel that:

"...the current levels of radioactive contamination of the territory of the Marshall Islands pose no risk of adverse health effects to the present generation. Similarly, on the basis of current genetic knowledge, we judge the risk of hereditary diseases to future generations of Marshallese to be no greater than the background risk of such diseases characteristic of any population."

Four atolls have been identified where exposure rates are elevated to the extent that remedial actions are indicated for some of the islands..." [3].

Now, I would like to briefly turn to the Nationwide Thyroid Disease Study (NWTDS) that I directed in collaboration with medical specialists from England and Japan. Part of the motivation for that study stems from the well-known sensitivity of the thyroid gland of young children to ionizing radiation. Studies elsewhere indicate that exposure to radioactive iodine released from nuclear tests might be responsible for an increase in thyroid cancer. In addition to aiming to provide a public health service by providing free examinations, we set out to examine the hypothesis put forth by Hamilton et al. [8] concerning the prevalence of thyroid nodules among 2273 inhabitants of 14 of the 24 inhabited atolls born before the 1954 BRAVO test. His finding was that the prevalence of nodules decreased among that group with

increasing distance from Bikini. His interpretation was that exposure to radioiodines was likely much broader than believed prior to his publication of 1987. The NWTDS examined 4762 Marshallese born before the end of nuclear testing in the Marshall Islands. Our examinations used palpation (feeling of the neck), as did Hamilton, though we also used high-resolution ultrasound that Hamilton did not. We found a relatively high frequency of thyroid cancer and benign thyroid nodules and we provided written medical evidence of each finding to each person examined, the Majuro Hospital, and the Nuclear Claims Tribunal. The high frequency of nodules and thyroid cancer, is consistent with observations by other investigators for island locations throughout the Pacific where there is no evidence of exposure to radioactive iodine. Of more relevance here, is that the observations of the NWTDS did not confirm the hypothesis of Hamilton et al., i.e., we did not find a significant decrease in nodule prevalence with increasing distance [9, 10]. Though our data suggested that the occurrence of thyroid cancer might be related to our preliminary estimates of radiation dose, there was no such evidence when the observations from Utrik atoll were removed from the data set. I would like to note here that because our study did not confirm Hamilton's hypothesis, it does not disprove it. However, replication of scientific findings is considered part of the gold standard in scientific research and our study that was larger and used more sensitive techniques to detect nodules, did not replicate his findings.

Due to time and space limitations, this concludes my statement. I hope you have found this information to be useful.

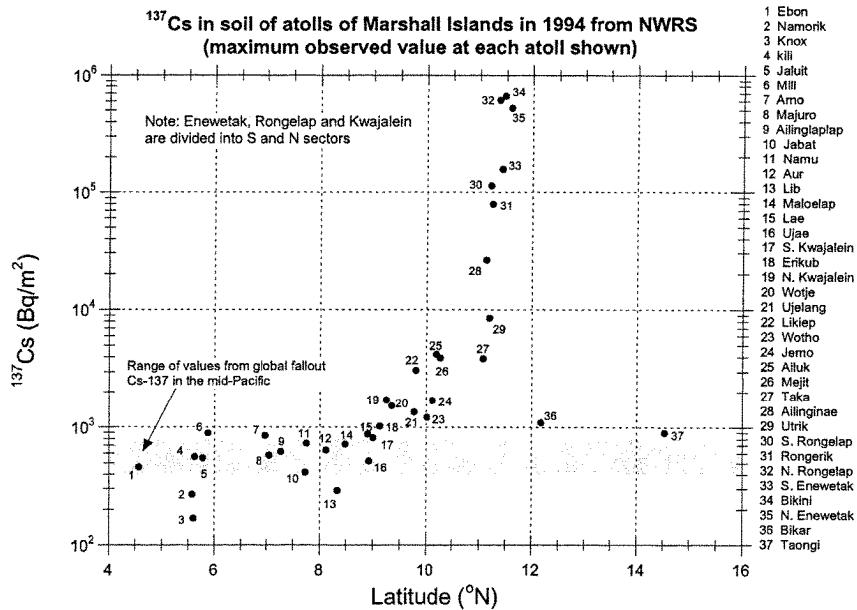


Fig. 1. Maximum observed value of Cs-137 at each atoll from the NWRS in 1994) [4].

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**Response to questions submitted for the record by Dr. Steven Simon**

**Question 1: You state that estimates of radiation dose, which have been debated here, are not crucial when figuring "changed circumstances." Holding that to be true, was the geographic distribution of fallout the best guide for the Tribunal in awarding those that may have even had naturally occurring cancers in the RMI?**

*REPLY to Chairman Pombo:*

I am happy to answer your question. To do so completely, I would like to give a little background to my statement about which you are inquiring.

First, I do not personally endorse a compensation plan such as that enacted by the U.S. RECA law or by the Nuclear Claims Tribunal, whereupon the likelihood that radiation caused an individual's cancer is not considered. Such plans are usually touted to prevent any deserving individual, i.e., a person with cancer actually caused by radiation exposure, from not receiving their just compensation. The net effect is, of course, great expense to make payments to the general population who have no radiation related disease as well as a potential dilution of the payments for those who are truly deserving. Such a situation is inevitable when the number of radiation related cancers are a small number compared to the number of naturally occurring cancers. This is the reason why in about 1992 or thereabouts, I testified at a NCT hearing that individual compensation should be related to an individual's risk, i.e., to their radiation exposure. Such ideas, as you know, were rejected by the NCT. Here I might digress slightly to say that such "probability of causation" calculations could be done much more simply for the NCT than those required for the U.S. energy workers under their compensation plan. The reason they could be done more simply is twofold: (1) There was little diversity of diet or lifestyle in the RMI in the 1950s; hence, persons of the same age could be assumed as similar in terms of all exposure variables except location. (2) In the RMI in the 1950s, there was little between-atoll migration, except for reasons of marriage, and as the NCI calculations indicated, most of the exposure was received either in 1954 or 1958. Hence, the age and whereabouts of a Marshallese in those two years would be the primary determinant of dose and of radiation risk.

Because there are no requirements for compensation under the current NCT statutes, other than having medical validation of a cancer on their list and having lived sometime and anywhere in the Marshall Islands during the years of nuclear testing, the radiation dose a person received is irrelevant for any individual award. That is the reason that I said in my May testimony before the House committee that radiation dose is not crucial to a determination of "changed circumstances." Regardless of how poor or good the historical estimates of radiation doses were, or what previously classified literature might now be available to shed light on past radiation doses, or what recent dose calculations indicate, radiation doses received from the nuclear testing have no bearing on the compensation scheme enacted by the NCT.

One might argue that the magnitude of radiation doses received by Marshallese would affect the total number of cancers to occur in the RMI and the amount of money needed to completely fund the compensation program. In theory, that is true. However, the NCI's calculations indicate that the overall occurrence of cancer in the RMI as a result of radiation exposure was increased by less than 10%. This again is the reason that I stated that neither the radiation dose nor the number of radiation-caused cancers is highly relevant to the changed circumstances petition (or to

the financial difficulties of the NCT). The NCT set out on a course to compensate all cancers. Eventually, 35%-40% of all people in the world, including Marshallese, will develop cancer for natural (or what we call "unknown") reasons. Hence, the NCT needed to plan on making payments for at least 5,000 naturally occurring cancers, i.e., 35% of the population alive in 1954 ( $0.35 \times 14,000 = 4,900$ ) plus the radiation cases, which the NCI has estimated adds a relatively small increment (about 500). The lifetime risk of cancer is about 35% worldwide and has been known for many decades and should have been planned for. There are no changed circumstances with regard to that fact.

Mr. Pombo, you asked "was the geographic distribution of fallout the best guide for the Tribunal in awarding those that may have even had naturally occurring cancers in the RMI." The answer is no. For the reasons I have discussed, the geographic distribution of fallout could be used to award individuals in a more prudent fashion than is done presently. But the distribution of fallout has no bearing on where naturally occurring cancers would occur. The number of cancers to eventually occur for natural reasons among the residents of any atoll is simply related to the size of the population there. According to the NCI analysis (see Table 3 of their report to the Senate Energy Committee), the southern atolls of the Marshall Islands had about 84% of the country's population in 1958 and, therefore, about 84% of the natural cancers (i.e., around 5400) would develop among those people. But those atolls also had the lowest radiation doses, leading to an increase in the cancer rate at those locations of less than 1.5%.

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The CHAIRMAN. Thank you. Mr. Bearden.

**STATEMENT OF DAVID BEARDEN, ANALYST IN ENVIRONMENTAL POLICY, CONGRESSIONAL RESEARCH SERVICE, LIBRARY OF CONGRESS, WASHINGTON, D.C.**

Mr. BEARDEN. Chairman, member of the committees, thank for the opportunity to represent the Congressional Research Service at today's hearing.

I am speaking on behalf of a team of authors who contributed to a CRS report on this topic. This report was released in March of this year, to examine the Marshall Islands' Changed Circumstances Petition for additional compensation from the United States for damages resulting from nuclear weapons tests in the 1940s and 1950s, and the viewpoint of the Bush Administration that further compensation is not warranted.

Today, I will be summarizing my written statement, which presents an overview of the CRS report. In summarizing the CRS report, I will be reiterating some of the background information you have heard today.

My statement and the full CRS report are submitted for the record.

According to U.S. Government estimates, the United States has spent \$531 million in the Marshall Islands on various nuclear test-related compensation and assistance.

This assistance includes health care, medical surveillance and environmental monitoring, cleanup of soil contaminated from radioactive fallout, and resettlement efforts.

Enacted by Congress in 1986, the Compact of Free Association established the Marshall Islands as a freely associated state and created a nuclear claims fund of \$150 million. This fund and subsequent returns on its investment were intended by the U.S. Government to provide an adequate amount for a full and final settlement of compensation claims for damages from past nuclear weapons tests.

Section 177 of the Compact established a Nuclear Claims Tribunal to adjudicate claims for compensation from this fund.

Section 177 also permits the Marshall Islands to request further compensation in addition to the original \$150 million under certain conditions.

In summary, additional compensation may be sought if loss or damages to persons or property arose or were discovered that could not reasonably have been identified as of the effective date of the agreement and if such injuries rendered the provisions of the Compact manifestly inadequate.

In September 2000, the Marshall Islands Government submitted its petition to Congress requesting additional compensation pursuant to Section 177 of the Compact.

The petition requests compensation for personal injury awards, property damages, which include the loss of land use, environmental cleanup costs, and hardships suffered; also health services infrastructure, a health care program, radiation exposure monitoring, and other programs.

The petition justifies its claims of changed circumstances primarily upon information that it presents as new and additional since the Compact's enactment in 1986. For example, the petition asserts that there is more extensive radioactive fallout than previously known or disclosed and that more stringent U.S. radiation protection standards issued in 1997 and 1999 warrant further cleanup of contaminated soil.

The petition requests a total of \$3.3 billion in further compensation, which includes \$14 million for personal injury, \$949 million for property damages, of which \$522 million is for loss of past and future use of the land, \$50 million for medical services infrastructure, and \$45 million annually over the next 50 years to fund a health care program for those exposed to radiation. And that amount is approximately the \$2.3 billion that was mentioned earlier today for the health care program.

In January 2005, the Department of State released a report dated November 2004, outlining the Bush Administration's viewpoints on the legal and scientific basis of the Marshall Islands petition.

It concludes that the Marshall Islands request does not qualify as changed circumstances within the meaning of the Compact. It also disputes key claims of the petition regarding the geographical extent of radioactive fallout, and the applicability of more recent U.S. radiation protection standards for the cleanup.

Consequently, the Bush Administration contends that there are not legal or scientific bases for considering additional payments.

Regarding loss of land use, the State Department's report indicates that all losses and damages to property from past nuclear tests were knowable and estimable prior to the Compact's enactment in 1986.

The Bush Administration argues that the loss of land use, therefore, could have been reasonably identified at the time of the Compact and that the petition's more recent loss estimates, in effect, do not represent a changed circumstance warranting further compensation.

The CRS report identified four possible policy options in considering whether to provide additional financial compensation to the Marshall Islands. These options for Congress include: grant or reject the Changed Circumstances Petition's request in whole or in part on the basis of the changed circumstances rationale; continue congressional payments through appropriations measures on an ex gratia basis; enact legislation that would provide for a full and final settlement of claims; or last, through an amendment to the Compact of Free Association, allow Federal courts to review the judgments of the Nuclear Claims Tribunal and to decide whether to order the United States to pay these awards in whole or in part.

Chairman, members of the committee, I hope this brief overview of the CRS report will be helpful. We welcome your questions and comments. I can respond to questions you may have regarding environmental cleanup, as I wrote that section of the CRS report, and my fellow CRS specialists here with me today who also contributed to the report can address other questions you may have relevant to their areas of expertise. Thank you.

[The prepared statement of Mr. Bearden follows:]

**Statement of David Bearden, Analyst in Environmental Policy,  
Congressional Research Service**

Mr. Chairman, Members of the Committees, thank you for the opportunity to represent the Congressional Research Service (CRS) at today's hearing. I am speaking on behalf of a team of authors who contributed to a CRS report on this topic. This report was released in March of this year to examine the Marshall Islands' Changed Circumstances Petition for additional compensation from the United States for damages resulting from nuclear weapons tests in the 1940's and 1950's, and the viewpoint of the Bush Administration that further compensation is not warranted.

The CRS report examines several issues related to the personal injury, health care, and property damages claims in the Petition to Congress. These issues include estimated occurrence of radiation-related illnesses in the Marshall Islands; the methodology for determining the value of "lost use" of damaged properties; U.S. radiation protection standards that could be used to determine whether further cleanup is necessary; and the extent of radioactive fallout. My testimony today presents a summary of our report. A copy of the full report is submitted for the record.

According to U.S. government estimates, the United States has spent \$531 million in the Marshall Islands on various nuclear test-related compensation and assistance. This assistance includes health care, medical surveillance and environmental monitoring, cleanup of soil contaminated from radioactive fallout, and resettlement efforts. Congress provided about half of this amount in "ex gratia" payments, i.e., not compelled by legal right or formal agreement.

Enacted by Congress in 1986, the Compact of Free Association established the Marshall Islands as a "freely associated state," and created a Nuclear Claims Fund of \$150 million. This fund, and subsequent returns on its investment, were intended by the U.S. government to provide an adequate amount for a "full and final settlement" of compensation claims for damages from past nuclear weapons tests. Section 177 of Article IX of the Compact established a Nuclear Claims Tribunal to adjudicate claims for compensation from this fund.

Section 177 also permits the Marshall Islands to request further compensation in addition to the original \$150 million under two conditions. Additional compensation may be sought if loss or damages to persons or property arose or were discovered that could not reasonably have been identified as of the effective date of the agreement; and if such injuries rendered the provisions of the Compact "manifestly inadequate."

In September 2000, the Marshall Islands government submitted its Petition to Congress requesting additional compensation pursuant to Section 177 of the Compact. The Petition requests compensation for personal injury awards, property damages (including loss of land use, environmental restoration costs, and hardships suffered), health services infrastructure, a health care program, radiation exposure monitoring, and other programs.

As discussed in the CRS report, the Petition justifies its claims of "changed circumstances" primarily upon information that it presents as "new and additional" since the Compact's enactment in 1986. This information includes Department of Energy records that were declassified in the early 1990s, which indicated more extensive radioactive fallout than previously known or disclosed, and more stringent U.S. radiation protection standards that the Petition says should be used to determine the degree to which additional environmental cleanup may be necessary. These standards were issued in 1997 and 1999 and have been applied within the United States in certain cases.

As a result of this and additional information, the Marshall Islands government argues that certain circumstances have changed. These changes include greater than expected health consequences, higher costs of health care and environmental cleanup, and lower than expected investment returns from the Nuclear Claims Fund to pay compensation claims.

Furthermore, the Petition asserts that the Nuclear Claims Fund constituted a provisional "political settlement," not a final determination based upon a conclusive scientific assessment of costs. The Petition contends that by enacting legislation to approve the Compact in 1986 Congress provided the authority to appropriate additional compensation should the need arise. In addition, legal counsel for the Marshall Islands maintains that U.S. courts left open the possibility that plaintiffs in the Marshall Islands could return to the courts if they did not receive adequate compensation from the Compact.

The Marshall Islands' Petition includes claims of \$14 million for personal injury compensation, and \$949 million in compensation claims for property damages to Enewetak Atoll and Bikini Atoll. The amount for property damages includes \$522 million for loss of past and future use of the land. The Nuclear Claims Tribunal, established under the Compact, agreed that such compensation was warranted under Section 177 of the Compact. The Petition also includes requests for other compensation, including \$50 million for medical services infrastructure, and \$45 million annually over the next 50 years to fund a health care program for those exposed to radiation. Combined, the total request for further compensation in the Petition is nearly \$3.3 billion.

In January 2005, the Department of State released a report, dated November 2004, outlining the Bush Administration's viewpoints on the legal and scientific basis of the Marshall Islands' Petition. The Departments of Energy and Defense contributed to this report. It concludes that the Marshall Islands' request does not qualify as changed circumstances within the meaning of the Compact. It also disputes some key scientific claims of the Petition regarding the geographical extent of radioactive fallout and radiation dose estimates, as well as the Petition's claims that more stringent U.S. radiation protection standards warrant further cleanup in the Marshall Islands. Consequently, the Bush Administration denies that there are no legal or scientific bases for considering additional payments.

Regarding loss of land use, the State Department's report indicates that all losses and damages to property from past nuclear tests were knowable and estimable prior to the Compact's enactment in 1986. The Bush Administration argues that the loss of land use therefore could have been reasonably identified at the time of the Compact, and that the Petition's more recent loss estimates, in effect, do not represent a changed circumstance warranting further compensation.

The Administration's report further suggests that the radiological health care needs of the Marshall Islands, as requested in the Petition, are addressed in part through health sector grants of approximately \$16 million per year. Congress authorized these grants in amendments to the Compact in 2003. However, Marshall Islands officials argue that the Petition's requests were not a part of the bilateral negotiations to amend the Compact, and that the amendments were not intended to account for nuclear test compensation claims. They add that a large portion of the expenditures noted by the Administration supported U.S. government research into the effects of radiation on human beings and the environment. They argue that such research therefore benefitted U.S. interests as well, rather than directly benefitting communities affected by the nuclear testing.

The CRS report identified four possible policy options in considering whether to provide additional financial compensation to the Marshall Islands. These options include:

- Grant or reject the Changed Circumstances Petition's requests, in whole or in part, on the basis of the changed circumstances rationale;
- Continue congressional ad hoc, *ex gratia* payments through appropriations measures;
- Enact legislation that would provide for a "full and final settlement" of claims; or

- Through an amendment to the Compact of Free Association, allow federal courts to review the judgments of the Nuclear Claims Tribunal and to decide whether to order the United States to pay these awards, in whole or in part.

Mr. Chairman, Members of the Committees, I hope this brief overview of the CRS report will be helpful. We welcome your questions and comments, which will be answered by relevant experts on the team of CRS specialists here with me who contributed to the CRS report. Thank you.

**[Response to questions submitted for the record by David Bearden, Analyst in Environmental Policy, Congressional Research Service, follows:]**

**CONGRESSIONAL RESEARCH SERVICE**

Memorandum

August 12, 2005

TO: House Committee on Resources  
 FROM : Salvatore Lazzari, Specialist in Public Finance, Resources, Science, and Industry Division  
 SUBJECT: Follow-Up Questions from the Committee's May 25th Hearing on the RMIs, Changed Circumstances Petition

This memorandum is provided in response to your letter of June 28 concerning the Republic of the Marshall Islands (RMI) Changed Circumstances Petition (CCP) to the U.S. Congress. More specifically, the letter from Representative Richard W. Pombo, Chairman of the House Committee on Resources, requests that the Congressional Research Service (CRS) address the following two committee questions.

**Question 1: A large monetary component of the RMI petition is a request for the loss-of-use of land. Can you briefly describe your findings in this regard and if they resulted in a justification of this amount?**

In September 2000, the RMI submitted their CCP to the U.S. Congress requesting \$3,300 million in additional compensation for U.S. nuclear testing on Enewetak and Bikini atolls during the 1940s and 1950s. In 2000 and 2001, the Nuclear Claims Tribunal (NCT), which adjudicates damage claims filed by RMI citizens, awarded the claimants the amount as judgment for personal injury and property damages. The \$3,300 judgment includes unpaid property damages awards for the atolls of Enewetak and Bikini totaling \$949 million, of which \$522 million is for the lost use of property (\$278 million for Bikini and \$244 million for Enewetak) from the date of evacuation in the 1940s to the date of return, which is projected to be in 2026 (for Enewetak) and 2027 (for Bikini). The remaining \$427 million (\$949 million less \$522 million) is for other property damages: soil remediation and land restoration, and hardship.<sup>1</sup> The award for \$522 million, which is 15.8% of the total judgment, is in addition to amounts already paid for loss-of-use, which, through the year 2000, the NCT reports as about \$129 million for both atolls (see Table 1).

CRS's main finding is that the \$522 million awarded by the NCT for loss-of-use of Enewetak and Bikini but unpaid due to lack of funds, appears to be significantly overstated.<sup>2</sup> The primary source of this overstatement is that the NCT's estimation methodology—the sample rent data, assumptions, and statistical procedures (i.e., the sampling technique and the use of the exponential regression model)—overesti-

<sup>1</sup> The CCP petition considers the personal hardships endured by the affected RMI population—famine, near starvation, and death—part of the property damages because they were caused by the severe limitations of the resources available on alternate habitation atolls.

<sup>2</sup> According to one estimate, since 1954, the United States has provided \$531 million to the Marshall Islands for nuclear test damages, including compensation payments, environmental cleanup and restoration, and resettlement programs. This total also includes an estimated \$138 million in Department of Energy (DOE) radiological and health monitoring in the four affected atolls and medical programs for the residents of Rongelap and Utrik through 2002. The Compact of Free Association established a Nuclear Claims Fund (NCF) of \$150 million for personal injury and property damages claims, health care, medical surveillance and radiological monitoring, trust funds for the four atolls, and quarterly distributions to the peoples of the four atolls for hardships suffered. Beyond the broad guidelines under the Compact, there are no specific rules on how the \$150 million was to be spent. A U.S. State Department report suggests that lack of funds is due to excessive damage awards by, for example, awarding damages to citizens throughout the RMI although the incidence of nuclear damages appear to be more limited. See: U.S. Department of State, Report Evaluating the Request of the Government of the Republic of the Marshall Islands Presented to the Congress of the United States of America. November 2004.

mates the per-acre rental rate for land on Enewetak and Bikini, the key variable in the loss-of-use calculation.

CRS found that the appraiser's analysis done for the NCT overestimated rents on Enewetak and Bikini because Enewetak and Bikini are non-urban and land was used largely for agricultural purposes. The analysts applied an exponential regression model to rents established not in a competitive, free market for agricultural land on Enewetak and Bikini, but rather to government-established, and predominantly commercial, rents on the more urbanized, and densely populated, Majuro and Kwajalein atolls. Most land in the RMI is leased at "the official government rate" established by the RMI cabinet. This rate, which was set by the RMI government at \$2,500/acre on January 1, 1979, and increased to \$3,000/acre on October 1, 1989, serves as the benchmark for all lease transactions.

The RMI government is not only the lessor in over 40% of the leases and a major source of the demand for RMI land, but in many of the sample leases cited in the analysis, key government officials are also effectively the landlords of much of the land, which means they are also a supply source. The applicability of the resultant estimated average rentals from Majuro and Kwajalein to the distant, more agrarian, less populated, and less productive atolls of Enewetak and Bikini appears questionable. Applying an exponential regression model to noncomparable and unrepresentative sample rent data leads to projected rents of \$112,995/acre for the year 2027, which is equivalent to land value of nearly \$1,774,024/acre.

The appraiser's methodology also assumes that more land is lost to use, and for longer periods, than is actually the case (such as when vaporized islands are treated as not having been vaporized). The NCT's justification for making this assumption was twofold. First, it argued that Enewetak and Bikini are "part of the environmental whole" and should not be separated into islets. However, this assumption results in an inconsistency: Enewetak and Bikini atolls are treated as individual land masses for purposes of 1) calculating the annual rental values on unvaporized portions of the atolls, 2) adjusting for alternative habitation, and 3) adjusting for prior loss-of-use compensation already paid by the U.S. government. But, Enewetak and Bikini atolls are treated as collective land masses for the purposes of excluding the vaporized portions of the atolls.

The second reason given for including the vaporized land portions in the loss-of-use calculation is that there are problems in determining the value of the vaporized and otherwise unusable portions of Enewetak and Bikini. There should be no more problems in valuing vaporized land than in valuing unvaporized land. Given the equivalency between the value of land and the rentals earned on that land, an appropriate methodology would consider the vaporized land areas as being tantamount to a permanent taking of property, and estimate the capitalized land value based on the projected streams of rentals, using the estimated rentals at from the time of pulverization. In this way, past loss-of-use estimates would include the rental value of the vaporized portions up to the time of pulverization, and thereafter based on the capitalized value of these portions of the land as assets, with interest. This is the same as calculating future rents foregone, but it does so at the time of the destruction of the land, whether from vaporization or any other cause.<sup>3</sup> The NCT methodology also may undervalue the rentals on alternative atoll habitation, and assumes that recipients of rental proceeds, as consumers and savers, would have saved 100% of the rental proceeds.

The NCT's estimated average rents/acre used in the loss-of-use calculation—\$4,105/acre in 1996—also appears high when compared to average agricultural rents in the United States: \$17.50/acre in Montana, \$115/acre in Oregon, \$210/acre in California, \$88/acre in New Mexico (1995), and \$66.50/acre for the United States generally (1998). Using an alternative economic methodology, and applying it to RMI's national income and product accounts data, CRS has developed alternative estimates of agricultural land rents for Enewetak and Bikini for the period 1982-1990, which are more consistent with the underlying real (agricultural) use of the two atolls (and the RMI economy), as well as with agricultural rents observed in the United States and in regions in the Pacific.<sup>4</sup> CRS estimates rents/acre at \$115/

<sup>3</sup> Another illustration is the case of Runit Island of Enewetak atoll. This island has been indefinitely quarantined because it is used to store nuclear waste, and should thus be compensated based on its value at the time it was rendered unusable (plus interest).

<sup>4</sup> The NCT's estimated 1997 rental of \$4,167/acre, discounted at 8% for 30 years, is equivalent to land valued at \$46,911/acre, which is nearly 2,000% greater than the \$2,405/acre average price for Hawaiian land, and 5,000% more than the \$926/acre average price of farmland in the continental United States generally. In 1997 the U.S. Fish and Wildlife Service purchased 5,300 acres of land in the South Kona district of the Hawaiian Islands at a total cost of \$7.78 million, or \$1,468/acre, which translates into an estimated annual rent per acre of \$130. In June 2002, the average price of crop-land in Brazil was reported at \$355/acre. In April 2005, 100,725 acres

acre for the year 1982 rising to \$258/acre for 1990, as compared with the NCT's estimates of \$1,902 for 1982 rising to \$2,939 for 1990. Based on these rental rates, CRS estimates gross loss-of-use rentals for 1982-1990 (before adjustments and interest) of \$6.4 million, about 10% of the \$64 million estimated by the NCT for the 1982-90 period. Note that these are gross rentals, unadjusted for the value of alternative lands provided as habitation, prior loss-of-use compensation already provided by the U.S. Government, and interest. CRS estimates also exclude the value of environmental amenities (as do the NCT estimates) of the non-usable ecosystem.

Thus, in conclusion, based on 1) an analysis of the NCT's loss-of-use methodology, 2) empirical evidence of agricultural land rents in the continental United States, Hawaii, and selected areas of the Pacific, and 3) estimates based on an alternative economic methodology—one consistent with the real underlying productivity of agricultural lands on Enewetak and Bikini—the \$522 million figure appears to be overstated, perhaps significantly.

**Question 2: Have the amounts already allocated by the Tribunal for loss-of-use thus far exceeded, in your view, what their true value should be?**

Table 1 shows the amounts reported by the NCT as previously paid by the U.S. Government to the RMI government for loss-of-use of the Enewetak and Bikini atolls. These amounts represent the annual deductions made against estimated annual gross rentals to arrive at the \$522 million figure—they are the amounts previously paid by the U.S. Government for loss-of-use. Note that the amounts paid since 1986 are paid out of the \$150 million Nuclear Claims Fund, while amounts paid before that came from the budgets of various U.S. Government agencies, primarily the Interior Department.

As the table shows, through 2000, the United States has, according to the NCT, paid \$128.92 million for the lost use of the Enewetak and Bikini atolls. According to the NCT figures in Table 1, the amount of loss-of-use compensation already paid by the United States for the 1982-1990 period is \$36 million, which is \$29.6 million more than the CRS estimated gross rental of \$6.4 million for 1982-1990. Thus, CRS finds that the for the period 1982-1990, the U.S. Government loss-of-use compensation already paid, exceeds the rental value of the land as estimated by CRS.

CRS cannot state, however, whether for the entire time horizon over which there was past (or retrospective) loss-of-use (roughly 1946-2000) the \$128.92 million already paid exceeds the gross annual rental value. The alternative methodology used by CRS to estimate loss-of-use was developed from a neo-classical microeconomic model of agricultural rents that uses data from RMI's national income and product accounts (NIPA). These data were available only for the period 1982-1990. CRS is exploring the possibility of either obtaining NIPA data for additional years or adjusting the estimation methodology so as to generate gross rentals for other years in the total loss-of-use time horizon (roughly the period 1946-2027). Should additional NIPA data become available, or should it be possible to estimate gross annual rents for the remaining years in the loss-of-use time horizon, then it will be possible to estimate annual gross rentals for these additional years, and to then compare the results with loss-of-use payments in Table 1.

However, one might note that the degree of overstatement of gross rental value for the limited time period 1982-1990 made by the NCT is significant by any measure. The NCT's methodology estimates gross rentals of \$64.2 million as compared with CRS's estimates of \$6.4 million, an overstatement of over 900%. If the same degree of overstatement arises for the other years in the past-loss-of-use calculation, then it is possible that amounts already paid could exceed true rental value.

For more detail on the NCT's loss-of-use estimates, including CRS's alternative estimates, see the attached CRS report RL33029.

CRS hopes this information is useful. Please let us know if we can provide additional assistance.

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of New Zealand forest land went on sale for \$42/acre in New Zealand dollars (which, at the April 2005 exchange rate, converts to about \$30/acre in U.S. dollars).

**Table 1. Prior Compensation for Loss-of-Use: Figures Used by the NCT (\$ thousands)**

Enewetak		Bikini	
Date/Time Period	Amount	Date/Time Period	Amount
11/19/56	\$175	11/22/56	\$325
8/19/69	\$1,020	1957-1976	None
9/30/76	\$750		
1977	None	2/14/77	\$3,000
12/18/78	\$750	11/15/78	\$3,000
1979-1986	None	2/1/80	\$1,400
		9/10/82	\$3,000
		1982-1986	None
1987	\$3,250	1987	\$5,000
1988	\$3,250	1988	\$5,000
1989	\$3,250	1989	\$5,000
1990	\$3,250	1990	\$5,000
1991	\$3,250	1991	\$5,000
1992	\$3,250	1992	\$5,000
1993	\$3,250	1993	\$5,000
1994	\$3,250	1994	\$5,000
1995	\$3,250	1995	\$5,000
1996	\$3,250	1996	\$5,000
1997	\$3,250	1997	\$5,000
1998	\$3,250	1998	\$5,000
1999	\$3,250	1999	\$5,000
2000	\$3,250	2000	\$5,000
<b>Totals</b>	<b>\$48,195</b>		<b>\$80,725</b>

Source: Memoranda of Decisions and Order for Enewetak and Bikini attached to the *Changed Circumstances Petition*; and Administration evaluation of RMI *Changed Circumstances Petition*, November 2004. CRS Report RL32811, *Republic of the Marshall Islands Changed Circumstances Petition to Congress*.

NOTE: The CRS report RL33029 has been retained in the Committee's official files.

The CHAIRMAN. Thank you. Mr. Bearden, I will just start with you and ask you about environmental clean up.

Mr. BEARDEN. Yes, sir.

The CHAIRMAN. What needs to be done to have all of the land inhabitable from here on out? I mean is it possible to have people move back onto their lands or we there yet? I mean we have heard some conflicting testimony on that this afternoon.

I am just wondering if you can give me an idea of what is actually there.

Mr. BEARDEN. Well, Mr. Chairman, in terms of what is possible with the environmental clean up, that always depends on the technologies available. In regard to the Marshall Islands, we're talking about contaminated soil, so removal of the soil and then replacement with soil to take its place since the islands themselves the soil is fairly shallow there. It's a matter of do you have enough money and resources to remove that soil and do you have somewhere to put it to dispose of it safely.

It's not a technologically complex exercise to remove the contaminated soil, unlike if you were remediating ground water contamination.

So the question with the Marshall Islands is how much are you willing to remove in terms of the contaminated soil? Do you have a place to put it? And how much money are you willing to spend?

Another question relevant to it is, what standard do you want to apply to the cleanup to determine how much soil would have to be removed to make it safe for an unrestricted use, such as human habitation or agricultural purposes.

That cleanup standard is what is in dispute between the Bush Administration and the Marshall Islands Government. The cleanup standard that the Marshall Islands Government would like to use is EPA's recommended guideline of the 15 millirems that you've heard today and referred to in various testimonies. And the Bush Administration contends that 100 millirems would be sufficiently protective. And that is the standard that the Department of Energy uses at its own nuclear weapons cleanup sites in the United States.

There have been at least two instances where the Environmental Protection Agency's standard of 15 millirems has been used for the cleanup of radioactive soil in the United States. That's both at the Hanford site in Richland, Washington, and the Rocky Flats site in Colorado.

So there is some precedent for using it in the United States, but it is not an enforceable standard that is required at all cleanup sites. Therefore, it is decided in the United States on a case by case basis.

The CHAIRMAN. What is the norm?

Mr. BEARDEN. The norm is the 100 millirem standard that the Department of Energy uses for its clean up.

The CHAIRMAN. In regard to the loss of use of land, one of the largest monetary components of the petition deals with that loss of use of land. Can you briefly describe your findings in this regard, and if they resulted in a justification of that amount?

Mr. BEARDEN. Mr. Chairman, my colleague with me here today, Sal Lazzari, could address that topic if I might allow him to approach the microphone?

The CHAIRMAN. Yes. Just identify yourself for the record.

Mr. LAZZARI. Thank you, Mr. Congressman. I'm Sal Lazzari. I am an economist with CRS. And your question was again to justify the \$522 million loss of use estimate?

The CHAIRMAN. Correct.

Mr. LAZZARI. I cannot really speak in terms of justifying it. What I have done in my work was to analyze the methodology, which was used to generate those numbers.

The CHAIRMAN. Well, just tell me this: was it a changed circumstance? Was it something that could have been seen in 1986? Was there something that changed that would justify it being in a change petition?

Mr. LAZZARI. Yes, it was something that was knowable in 1986. All the information was available at the time to estimate the numbers. It does not really justify in my mind, based on my analysis, a changed circumstance. That is correct.

Ms. WATSON. On that issue, Mr. Chair, if I might.

The CHAIRMAN. Yes.

Ms. WATSON. When we there, we were being told that the process of removing that contaminated top soil was very slow, and this was 2001, 2002. And because of it, they were not able to use that land, so they could not grow any crops and so on. That I would identify as a changed circumstance. You might have been able to determine back when the 177 was agreed upon that it would take X number of dollars, but doing it and actually finding a place to dump the soil I think is a changed circumstance because it was not completed when we were there, and that was just 3 to 4 years ago—3 years ago.

The CHAIRMAN. Reclaiming my time, I would just remind my colleague that there is a difference between ongoing liability or responsibility that we have versus a change in circumstance. We may agree that we have an ongoing liability here.

Ms. WATSON. We are talking apples and oranges?

The CHAIRMAN. Yes. What he is describing is whether or not they knew in 1986 that they weren't going to be able to use that land.

Ms. WATSON. If I might respond, we are talking about apples and oranges.

The CHAIRMAN. Yes.

Ms. WATSON. Then I think the orange today is the fact that they couldn't estimate how long it was going to take and what the costs would be because they—

The CHAIRMAN. And we may have an ongoing liability—

Ms. WATSON.—Were not able to—

The CHAIRMAN.—liability because of that.

Ms. WATSON. Yes.

The CHAIRMAN. But when we are dealing with a change of circumstance petition, it is something different, and that is what CRS was asked to look at, was the change of circumstance petition. That does not mean we don't have ongoing liabilities here or Congress may agree—

Ms. WATSON. So we are not talking about ongoing liabilities now?

The CHAIRMAN. Yes. And we are talking about the change of circumstance petition, and I mean this is something that we tried to deal with last year.

Mr. LAZZARI. If I can clarify—

The CHAIRMAN. Yes.

Mr. LAZZARI.—something on that? The point that you made, Madam Congressman, really relates to soil remediation which is part of the property costs. I did not deal with that, and you may be right that there changed circumstances in that area for that component. My analysis dealt with the \$522 million that really has to do with loss of use, which is a big fraction of the property damages, but it is separate from the soil remediation damages.

And in regard to the loss of use, all of the information in 1986 to estimate the loss of use for Enewetak and Bikini at least, anyway, was knowable and available, and, in fact, the estimates were made—generated in 1997 and 1996 and presented as awards in the year 2000 and 2001. All that information was available. There were no changed circumstances with respect to that loss of use.

The CHAIRMAN. My time has expired. I am going to recognize Mr. Abercrombie.

Mr. ABERCROMBIE. Thank you, Mr. Chairman, and thanks for making that clarification. It is a good point.

I hope everybody understands that we are going to try to be dealing with this almost on two tracks.

Now, Dr. Mauro, I congratulate you. In all my years on this committee, I believe that this is the first time that someone's resume is longer than their testimony.

[Laughter.]

Mr. ABERCROMBIE. And I take it coming out of an academic background, I read through it with some interest, and I think it is quite extensive. And I take it that maybe one of the reasons that you included virtually everything—I am quite willing to accept the fact there may be even more out there that you didn't include.

I did not read Mr. Bearden's testimony the same way you may have taken it. Now, the report itself that you referred to may have taken exception to some of your conclusions. But certainly the testimony he presented today didn't. His testimony today seems to be more of a survey of the various elements that we have to take into consideration. But you said in your testimony that you and Dr. Behling, your conclusions that there were, in fact, change in circumstances, particularly with relation to incomplete estimates of dose and changes in radiation and protection and cleanup standards were seen adversely by the CRS report and by the conclusions reached by the State Department.

I didn't see that, at least with respect to the CRS report. Could you elaborate a little bit on that?

Dr. MAURO. Sure. The CRS report and the statement we just heard rejects the 15 millirem pre-criteria as the applicable criteria for cleanup of the Marshall Islands.

Mr. ABERCROMBIE. OK. Mr. Bearden, that wasn't in the report that you made? Excuse me. Is it in the report, but not in your testimony today?

Mr. BEARDEN. Congressman, the CRS report nor my testimony or comments here today reject the applicability of the 15 millirem standard. What CRS has identified is that it is decided in the United States on a case by case basis for specific sites.

So if the Marshall Islands were in the United States, the 15 millirem standard may be applied or it might not. If it were in the

United States and it were a former nuclear weapons test site, it would most likely be under the jurisdiction of the Department of Energy. And just like the Hanford site in Washington State and the Rocky Flats site in Colorado, the Department of Energy and the Environmental Protection Agency would enter in negotiations to decide what standard to use.

Mr. ABERCROMBIE. I understand that part, but did you say you actually reject it? I use the CRS all the time, and they very seldom say what should be accepted or rejected to me. Usually they make the kind of analysis that you just made, where you lay it, and then we make a judgment.

Mr. BEARDEN. Yes, Congressman. That is correct. The word "reject" is not in the CRS report.

Mr. ABERCROMBIE. OK.

Mr. BEARDEN. The phrase that I did use in my report is that the application of the 15 millirem standard is not necessarily the case in the United States—

Mr. ABERCROMBIE. OK.

Mr. BEARDEN.—based on numerous factors.

Mr. ABERCROMBIE. All right. Yes. On that, I will editorialize a bit here. I would agree with you, Dr. Mauro, that it is a changed circumstance or could be construed as a changed circumstance, although I could certainly be persuaded by the Chairman that this is an ongoing liability, and I mean that; that in dealing with this and the honest answer from me is I could care less what the hell the standard is in the United States. These are other people. These weren't citizens of the United States. We dropped—you know, we tested hydrogen bombs, for Christ's sake, out on these people. If they want to say 15 milligrams, that is OK with me—millirems rather. And if the people of the United States are willing to be hit with radiation and accept that kind of crap from its own government, that is our problem.

But so—

The CHAIRMAN. Is that the end of the editorial comment?

Mr. ABERCROMBIE. Yes. That is the end of the editorial comment.

And apparently, at least in Hanford, they are not willing to accept it. I would like to know whether the people who accept the hundred millirems who they are. Everybody else I guess. I don't know.

Dr. Mauro, then, the heart and soul, if you will, of your testimony is that you cite in quite a lot of detail the following. Let me make sure that I understand what it is. And, Dr. Simon, I read through your statement, and I am not quite sure whether you are in agreement or disagreement here as a result of reading it, so let me give you what I consider to be Dr. Mauro's conclusions, and then if you want to arm wrestle them, you can do that. OK?

Essentially, what Dr. Mauro is saying is that the—he is not arguing that the amount of radioactive material is any more than might have been cited or not cited in the reports, and, in fact, given half life situations presumably it decreases, even marginally, year by year.

But his point is as he reads Section 177 in the Settlement Agreement that there is now a more—I am going to quote for you him directly now—"a more complete understanding of radiation expo-

sures and potential health impacts that were experienced by the people of the Marshall Islands due to weapons testing, and that these exposures and potential health consequences are much larger than previously believed." That is one point.

And the second point is that in addition, subsequent to the establishment of Section 177, the radiation protection standards for members of the public and the cleanup criteria for sites contaminated with radioactive materials changed dramatically. The standards are a lot more protective now.

So that would mean that he and Mr. Bearden are not essentially in disagreement; that there is a standard that is more protective now—15 millirems versus 100 millirems is I presume a significant difference. Now, whether one agrees that it should be that or not is a separate issue.

So would you conclude, Dr. Simon, or can you comment, on those two points that Dr. Mauro essentially is saying that we know more than we did before about the radiation exposures and potential health impacts of those radiation exposures and, second, regarding cleanup criteria and contaminated sites that the cleanup standards can be construed as much more protective now? Because as I read your testimony—the reason I'm asking you the question, Dr. Simon, is as I read your testimony, I wasn't quite sure whether you were saying there was more radiation than had been actually taken into account or less, particularly in the light of Dr. Bouville's testimony that the National Cancer Institute really hadn't taken into account much in the way of radiation studies and fallout studies, but had merely compared cancer rates with Native Hawaiians and cancer rates with Marshall Islanders and then drawn its conclusions with regard to baseline cancer rates.

Dr. SIMON. Congressman, that was a very long question. Could you focus it for me, please?

Mr. ABERCROMBIE. Yes. Well, I am not so sure it was a question. I was asking for your comments.

Dr. SIMON. That's fine.

Mr. ABERCROMBIE. Your testimony in the context of Dr. Mauro's statement that there are changed circumstances because we know more about the radiation fallout patterns and we know more about the potential health consequences of that and that we have more stringent standards now with respect to cleanup.

Dr. SIMON. I'll try and answer the best I can.

Mr. ABERCROMBIE. Sure.

Dr. SIMON. I don't believe that Dr. Mauro testified that we know more about fallout patterns today. Did you?

He did not.

Mr. ABERCROMBIE. OK. Then I am misstating it. More about radiation exposures and potential health impacts.

Dr. SIMON. Well, my life is studying health effects of radiation, so I would hope that after additional 10, 15, 20 years that we would indeed know more, so I certainly would not disagree with that.

Mr. ABERCROMBIE. OK. It may be a phrase of art. But you were here, I know, when Dr. Bouville was—

Dr. SIMON. Of course.

Mr. ABERCROMBIE.—explaining the National Cancer Institute. From what I can gather. Now, you know, I am just trying to read the testimony.

Dr. SIMON. Yes, and I'm willing to—

Mr. ABERCROMBIE. I am not sure that he used your work. Why did the Cancer Institute use all the work that you have done all these years?

Dr. SIMON. They did, sir.

Mr. ABERCROMBIE. OK.

Dr. SIMON. I would like to just refer back to my opening remarks.

Mr. ABERCROMBIE. OK.

Dr. SIMON. I am employed by the National Cancer Institute presently.

Mr. ABERCROMBIE. OK.

Dr. SIMON. I am here today representing myself.

Mr. ABERCROMBIE. Yes.

Dr. SIMON. You know that, and in that context I can discuss the NCI work only in a very limited sense. It's unfair to ask me to discuss—

Mr. ABERCROMBIE. OK.

Dr. SIMON.—their work. But I think it's—

Mr. ABERCROMBIE. Well, if Mr. Chairman, will note, I am never unfair.

Dr. SIMON. Well, it's fair to say this I think because it's referenced in the report, so you could be reading it just as well; that the NCI report did indeed use the findings of the RMI-sponsored nationwide radiological study. It did use those.

Mr. ABERCROMBIE. So do you conclude there are some changed circumstances that are here or are we talking about ongoing liability, in your personal capacity?

Dr. SIMON. Well, there's a whole range of issues, in fact—

Mr. ABERCROMBIE. You know nobody—let me—

Dr. SIMON. All right.

Mr. ABERCROMBIE. Two seconds.

Dr. SIMON. OK.

Mr. ABERCROMBIE. I will start again.

Dr. SIMON. All right, please.

Mr. ABERCROMBIE. I am calling on you because I am very impressed with your testimony and your background and your work here, and I respect it and so I am interested—do you feel this is an ongoing liability or do you feel it is a changed circumstance the way it is being cited in terms of Dr. Mauro talking about incomplete estimates of dose and changes in radiation protection and cleanup standards?

Dr. SIMON. All right. Well, there's a whole number of—you named at least two or three points there that I could answer your question separately on. In terms of incomplete dose, I think—

Mr. ABERCROMBIE. Is it an ongoing liability or is it a changed circumstance?

Dr. SIMON. Well, I don't think anyone would argue that there's not an ongoing liability.

Mr. ABERCROMBIE. OK. And what about the question of incomplete estimates of dose? Maybe they are more complete than we

known and we can rely on you for that. What about changes in radiation protection and cleanup standards?

Dr. SIMON. There have been changes in different agencies' recommended guidelines for clean up. I'm not an expert in clean up. I know quite a bit about it because it's in the realm of health physics, but I don't do it routinely.

There have been different agencies recommendations. Dr. Mauro summarized them.

Mr. ABERCROMBIE. Which have changed since 1986?

Dr. SIMON. For certain applications, yes. There is no—these are not law. These are to be used under certain conditions where it's practical and where it's dictated by other interests that I can't comment on.

Mr. ABERCROMBIE. Right. That is regulatory changes. OK. I am—

Dr. SIMON. I'm not trying to be evasive.

Mr. ABERCROMBIE. No. No. You are not. No, you are being very helpful. You are being very helpful. In other words, what the Chairman has to do and what we have to do under his direction is make some decisions here with regard to what is ongoing liability and what is indeed changed circumstances—

Dr. SIMON. I think you're correct.

Mr. ABERCROMBIE.—And try to be sensible about it.

Dr. SIMON. I think you're very correct.

Mr. ABERCROMBIE. Right?

Dr. SIMON. That is correct.

Mr. ABERCROMBIE. Thank you. You have all been very, very helpful and this testimony and the reports are extraordinarily helpful.

The CHAIRMAN. Ms. Watson, do you have questions?

Mr. Faleomavaega.

Mr. FALEOMAVAEGA. Thank you, Mr. Chairman.

The CHAIRMAN. How was the trip downtown?

Mr. FALEOMAVAEGA. I offer my apologies, Mr. Chairman, for not being here, as I had another conflict in schedule.

The CHAIRMAN. I asked your questions for you, so do not worry.

Mr. FALEOMAVAEGA. Again, I cannot thank you enough, Mr. Chairman, and our good colleague, Mr. Abercrombie, for taking up during here in terms of what we are trying to accomplish here. I really appreciate the testimonies that have been brought forth by Dr. Mauro, Dr. Simon, and Mr. Bearden.

If it is all right, Mr. Chairman, I do have just a couple of questions. OK. Quick and easy.

As a layman, I wanted to ask Dr. Simon what seems to be the difference between rads, roentgen, and millirems.

Dr. SIMON. Do you really want to know?

Mr. FALEOMAVAEGA. Well, let me ask you this because as I read it in this report in 1955 the measurement of I guess radioactivity in these islands was using millirems. MRs?

Dr. SIMON. No. Actually, I know the 1954 report very well. That was before the use of millirem was very conventional. And although they used a small "R" in that report, I know for a fact that it was actually roentgen, which today is abbreviated by a capital "R." But that's just because there was not a convention established at that time.

Mr. FALEOMAVAEGA. What is the standard measurement that we now use. EPA has the different standard?

Dr. SIMON. Well, what you're asking about are actually the units in which I measure something. For example, I can either quote my weight in pounds or kilograms.

Mr. FALEOMAVAEGA. No. No. No. I want to know the units that is the standard procedure, not just by Dr. Simon or Dr. Mauro. What is the accepted standard of measuring radiation exposure to the human being?

Dr. SIMON. Well, I can address that, sir. I did build a radiation laboratory in the Marshall Islands and know a bit about it.

You measure different kinds of radiation in different ways and each one has their own technical requirements.

Mr. FALEOMAVAEGA. Well, let me ask you this. As I may have stated earlier, according to the cumulative dosages by event and location, the island of Rongelap ended up with 202,000—

Dr. SIMON. Yes.

Mr. FALEOMAVAEGA. Millirems.

Dr. SIMON. The way that number was generated was the following. I'll make this—try to make it very simple.

That was the result of a single very quick measurement by an aerial survey. So they went. They flew over the island, the Atomic Energy Commission sponsored planes.

They made a measurement of the rate of the exposure. How many roentgens per second or per minute or per hour. And they—

Mr. FALEOMAVAEGA. Dr. Simon, what does this do to the human being? That is what I am trying to get at.

Dr. SIMON. Now, you've misdirected.

Mr. FALEOMAVAEGA. OK.

Dr. SIMON. I mean, now you've changed the question that you've asked me. What does it do?

Mr. FALEOMAVAEGA. Yes. If this island of Rongelap was exposed to 202,000 millirems, what does this do to human beings living on the island of Rongelap when we dropped Bravo?

Dr. SIMON. What it does when you are exposed to radiation, it increases the risk over the remaining life that you have of developing a disease that is—some diseases that are potentially caused by radiation. So it increases the likelihood.

Unless it reaches a very high level, it may not do anything immediately. There are immediate effects at very high levels. For example, your hair can fall out. Your skin can be burned. You can develop cataracts in your eyes. But primarily, over the long time, it increases the chance that you will be one of those people that develop cancer. You may be lucky, 'cause you have good genes, and maybe you won't.

But it increases that chance. And when you have a group of people, it will increase, on average, the number within that group that will develop—

Mr. FALEOMAVAEGA. Will you agree as a result of our nuclear testing program, there has been a tremendous increase of incidence of cancer—thyroid cancer—all different kinds of illnesses related to the nuclear testing program that has affected the health of these Marshallese people?

Dr. SIMON. Sir, I certainly would not disagree that there has been an increase in the amount of cancer in the Marshall Islands that we've been testing.

Mr. FALEOMAVAEGA. Dr. Mauro?

Dr. SIMON. The extent of that decrease is addressed in the NCI report.

Dr. MAURO. We heard the answer to the question. The National Cancer Institute estimates 530 additional cancers, based on their models. We have done the same analysis several years ago. Our numbers come in a little higher, but not inconsistent with that. So the estimate that the NCI came up with in terms of 530 additional cancers due to the radiation exposure is within the realm that I would say I would concur. But my numbers probably come in a little bit higher because our dose estimates that we believe these folks are—

Mr. FALEOMAVAEGA. Can you help me how the NCI managed to use Native Hawaiians as the baseline in terms of incidence of cancer to the study that was done for the Marshallese? I am at a loss here. Yes, Dr. Mauro.

Dr. MAURO. I'd be happy to explain my understanding of reading I guess the—I did not read the NCI report. I read the other reports that were referenced here, the Congressional Services report. Let me explain my understanding of what they say.

Knowing the doses that the folks experienced from fallout, you could predict the number of cancers—thyroid cancers and all other types of cancers—based on the reconstruction of the doses.

On that basis, they come up with an estimate of 530 additional cancers are anticipated because of those doses.

Now, the baseline comes in when they discuss a 9 percent increase. See so the number that they—the way I understand it is the absolute number, 530, is based specifically—you calculate a person's radiation dose or how many people got how much radiation.

Mr. FALEOMAVAEGA. OK. You are getting really way above me now.

Dr. MAURO. OK.

Mr. FALEOMAVAEGA. Let us come back to earth. OK?

Dr. MAURO. OK.

Mr. FALEOMAVAEGA. I think the estimates at the time of our nuclear test here was about 14,000 Marshallese. As of this date, what is the population of the Marshall Islands? About forty-some thousand? Fifty thousand? And may I ask both gentlemen is there any effect genetically on what happened to those people who were initially exposed to nuclear radiation in generational terms of their children and their grandchildren 50 years later? Is there a sense that this has—is there cancer incidence to the Marshallese because of the genetics formats—being exposed to it? Is this an accurate description or we don't know enough? And because we don't know enough, therefore, there is changed situation; right?

Dr. MAURO. I'll try to answer your question. The genetic effects of radiation. There's every reason to believe that the levels of radiation exposure experienced by the people of the Marshall Islands did, in fact, have adverse genetic effects that are being passed on.

However, the epidemiology of the problem, the statistics of it, you cannot discern the increase in the population because in normal background levels of genetic effects in populations are highly variable, and if you do have some increase, it's difficult to detect the presence of that increase.

So we have every reason to believe that, yes, the folks in the Marshall Islands did experience an increased incidence of genetic effects, but you cannot discern them as easily as you could discern the increase in the incidence of cancer.

By the way, this is exactly what happened in Nagasaki and Hiroshima. There is every reason to believe that the survivors of the atomic bomb experienced an increase incidence of genetic effects, but to this date, we cannot statistically demonstrate, a statistically significant increase that's been observed in the incidence of genetic effects.

Mr. FALEOMAVAEGA. In other words, just the difficulty of the whole issue of this nuclear exposure. We just don't know enough. I mean, we are learning, right, Dr. Simon?

I mean this not a sure thing.

Dr. SIMON. Of course.

Mr. FALEOMAVAEGA. And I am just—

Dr. SIMON. Absolutely—

Mr. FALEOMAVAEGA.—I am just trying to get a sense here. I was in Kazakhstan, Mr. Chairman, last year, invited by the president, and to my surprise, Mr. Chairman, I found out that 1.5 million Kazaks were exposed to the Russian nuclear testing program for some 30 years where they detonated 500 nuclear bombs, including the hydrogen bombs that they made.

Mr. Chairman, just one or two observations. We have conducted, as you said earlier, Mr. Chairman, over 30 hearings now, and there has got to be some resultant effect in terms of I certainly would look forward in working with you that we have to develop some sense of finality, and what the good people and the leaders of the Marshall's have been trying to resolving themselves. This nuclear commission that they have—claims commission, I think there is merit to what they have made recommendations for. I do feel really bad when I keep hearing these numbers being thrown around—2.3 billion there. Five hundred twenty million there. It makes it sound as if the Marshallese are just taking all this money, and if there is so much money that we are spending for the needs of these people, and yet somehow we seem to be spinning our circles here or wheels and not making any sense.

And, Mr. Chairman, as Mr. Abercrombie said earlier, I sincerely hope that we might be able to develop some kind of legislation bearing some concerns about the land claims as opposed to the medical needs of the good people of the Marshalls, and I look forward in working with you in that respect, and thank you very much.

Thank you, our friends who testified.

Ms. WATSON. One final question.

The CHAIRMAN. Yes.

Ms. WATSON. Thank you, Mr. Chairman. Just something that I need to hear. Let us take what Dr. Simon noted in his written testimony, and the nationwide radiological study and its scientific ad-

visory panel stated that the current levels of radioactive contamination of the territories, the Marshall Islands pose no risk of adverse health effects to the present generation. Do each of you agree or disagree with that assertion?

Dr. SIMON. I'd like to go first because that was the statement of the advisory panel—

Ms. WATSON. Yes.

Dr. SIMON.—that oversaw the study that I conducted and was appointed by the Marshall Islands Government for that very purpose.

There was—of course, there was nothing that that—well, first let me preface and say that the members of that panel were appointed from those group of scientists who have very, very high reputations internationally and are very knowledgeable. In fact, probably the world's foremost radiation geneticist, Dr. Sancar, from the Netherlands was on that panel. Probably the foremost. I don't think anyone would disagree with that. And I don't disagree with any of the statements that that panel made as well.

But I want you to understand that that is the radiation exposure today looking into the future. It's not about what happened in the past.

Ms. WATSON. So you would agree with what they said. It poses no risk of adverse health effects for the present generation?

Dr. SIMON. Yes, I would agree with that.

Ms. WATSON. You agree with that? What about the other two of you?

Dr. MAURO. I would not agree with that, and I think it needs an answer. The places where the people on the Marshall Islands are living right now, which—they are not living on Bikini or on Rongelap or in the northern atolls or of Enewetak because the radiation levels are dangerously high. OK. First of all, let's make that clear.

Where they are living are areas where the radiation levels are lower, much lower, but are above many places the normal levels that are—in other words, they're still elevated. There are many places, for example, on Utrik and Jaluit. There are marginally increased levels of exposure, but they are very low exposure. So, therefore, there is an incremental increase in their risk, but it's very, very small.

So I think it's only fair to say that, yes, there is an increase risk in some of the atolls where people are currently living, but it's extremely small. Certainly, if they were to relocate to Enewetak or Bikini or Rongelap, the risk would be much, much higher.

Ms. WATSON. Thank you. And, Dr. Simon?

Dr. SIMON. Congressman, please. Dr. Mauro is right. In addition to the statement that you read, there are some other explanation points in there.

There are four atolls noted in that report from where you took that statement from that are noted that have locations where the panel believed it would be inappropriate to resettle. So it's not a completely—a blanket statement. And so I do agree with Dr. Mauro that there are some locations—and they are noted very explicitly where they are.

Ms. WATSON. Well, to no risk to present generations?

Dr. SIMON. Well, those four atolls that have locations where we believe that it would be inappropriate to resettle because of an increase in risk, no matter how large or how small, those are noted there. There are four—there are islands on four atolls that are noted.

Ms. WATSON. Well, I think what I am hearing as the answer is that you do not support the statement that you—

Dr. SIMON. No, ma'am.

Ms. WATSON.—reiterated. Very good. Because we saw, we actually visually saw the second and third generation who had abnormalities that could only be generated from fallout. So, thank you.

The CHAIRMAN. If there are no further questions of this panel, I want to thank the panel for their testimony. It has been—

Mr. ABERCROMBIE. If I could just make a concluding remark?

The CHAIRMAN. Mr. Abercrombie.

Mr. ABERCROMBIE. The concluding remark I want to make, for those who came such a long way from the Marshall's themselves and for those of you who have devoted your life, as you have, Dr. Simon and others have to the situation, I just want to say believe me; you are in good hands with Chairman Pombo. There is not a more there person in the U.S. Congress than Chairman Pombo. And I can say that on behalf of all of the members in the minority this issue as a whole and the particulars of it will be well researched and taken into account and whatever conclusion comes out will be a very sober and serious one, and I'm sure that everyone, if not pleased with everything, will find that it's fair and complete.

The CHAIRMAN. Thank you. I thank the witnesses for your testimony and members of the Committee for their participation in this hearing. Members of the Committee may have some additional questions for the witnesses, and we will ask you to respond to those in writing.

The hearing record will be held open for that purpose. If there is no further business, I again thank the members of the Committee and all of our witnesses. The Committee stands adjourned.

[Whereupon, at 6:22 p.m., the Committee was adjourned.]

[A statement submitted for the record by Jonathan M. Weisgall on behalf of The Peoples of Bikini, Enewetak, Rongelap, and Utrok, follows:]

**Statement of Jonathan M. Weisgall on Behalf of  
The Peoples of Bikini, Enewetak, Rongelap and Utrok**

**I. Introduction**

Mr. Chairman, thank you for giving the peoples of the four atolls of Bikini, Enewetak, Rongelap and Utrok the opportunity to testify on issues relating to the changed circumstances petition contained in the Compact of Free Association. I have served as legal counsel to the people of Bikini Atoll since 1974, but I am submitting this joint statement on behalf of the four atolls that were most directly affected by the U.S. nuclear testing program in the Marshall Islands.

For decades, Congress has recognized and addressed the special needs of the peoples of the four atolls, and we believe that testimony from their representatives today would have helped make this hearing record more complete, especially with respect to factual and legal issues involving the Compact Section 177 Agreement. Nevertheless, we are pleased to submit our written testimony as part of the submission of the Marshall Islands Government.

Our issue is simple: We all filed lawsuits against the United States in the 1980s for the property damage inflicted on our atolls and, in some cases, for personal inju-

ries as well. Those claims were dismissed by U.S. courts as part of the overall Compact Section 177 Agreement, pursuant to which the United States and the Republic of the Marshall Islands (RMI) governments established the Nuclear Claims Tribunal to hear these claims. The Tribunal has made awards to the peoples of Bikini and Enewetak, and will issue ones soon to Rongelap and Utrok, but it lacks the funds to pay any of these awards.

Those lawsuits are property rights protected by the takings clause of the Fifth Amendment to the U.S. Constitution, which has been found to apply to the Marshall Islands. Under well established Supreme Court decisions going back to 1890, Congress has every right to close the doors of U.S. courts to lawsuits and take away those property rights as long as it provided for an alternative method of compensation and provided that at the time of the taking there is "reasonable, certain and adequate provision for obtaining compensation."<sup>1</sup>

The Tribunal has paid out less than one-half of one percent of these judgments because it lacks the necessary funds. For the United States to throw these lawsuits out of U.S. courts, to establish such a Tribunal to resolve these claims, and then to fail to fund the Tribunal adequately constitutes a taking under the Fifth Amendment of the nuclear victims' property, makes the establishment of the Tribunal a hoax, makes a mockery of the Compact, and arguably renders the Compact null and void.

The executive branch of the U.S. Government refused to negotiate with the RMI on this issue in the recent Compact talks. There is a clear and simple solution to the problem if Congress is willing to implement it. If not, the four atolls will have no choice but to return to court to continue what in some cases has been more than a 30-year history of suing the United States to force it to own up to the damage it caused to the citizens of the Marshall Islands in the course of spending trillions of dollars to win the Cold War.

## II. Background on Nuclear Testing Program in the Marshall Islands

In the 12-year period from 1946-1958, after moving the peoples of Bikini and Enewetak off their atolls, the United States conducted 67 atomic and hydrogen atmospheric bomb tests there, with a total yield of 108 megatons. This is 98 times greater than the total yield of all the U.S. tests in Nevada. Put another way, the total yield of the tests in the Marshall Islands was equivalent to 7,200 Hiroshima bombs. That works out to an average of more than 1.6 Hiroshima bombs per day for the 12-year nuclear testing program in the Marshalls. During these years, the Marshall Islands was a United Nations Trust Territory administered by the United States, which had pledged to the United Nations to "protect the inhabitants against the loss of their land and resources."<sup>2</sup>

Radioactive fallout from one of those tests—the March 1, 1954 Bravo shot at Bikini—drifted in the wrong direction and irradiated the 236 inhabitants of Rongelap and Utrok Atolls as well as the crew of a Japanese fishing vessel. Bravo, the largest U.S. nuclear test in history with an explosive force equal to nearly 1,000 Hiroshima-type atomic bombs, touched off a huge international controversy that eventually led to the U.S. moratorium on atmospheric nuclear testing and the U.S.-U.S.S.R. Limited Nuclear Test Ban Treaty.<sup>3</sup> President Eisenhower told a press conference that U.S. scientists were "surprised and astonished" at the test, and a year later the Atomic Energy Commission (AEC) admitted that about 7,000 square miles downwind of the shot "was so contaminated that survival might have depended upon prompt evacuation of the area...."<sup>4</sup> Put another way, if Bravo had been detonated in Washington, DC, and the fallout pattern had headed in a northeast direction, it would have killed everyone from Washington to New York, while near-lethal levels of fallout would stretch from New England to the Canadian border.<sup>5</sup>

The statistics 59 years after testing began:

- The Bikinians have been exiled from their homeland since 1946, except for a brief period after President Johnson announced in 1968 that Bikini was safe. Many of the islanders returned and lived there until 1978, when medical tests by U.S. doctors revealed that the people had ingested what may have been the largest amounts of radioactive material of any known population, and the peo-

<sup>1</sup> *Blanchette v. Connecticut General Insurance Corp.*, 419 U.S. 102, 124-25 (1974), quoting *Cherokee Nation v. Southern Kansas Railroad Co.*, 135 U.S. 641, 659 (1890).

<sup>2</sup> Trusteeship Agreement for the Former Japanese Mandated Islands, 61 Stat. 3301, 80th Cong., 1st Sess. (1947), Art. 6, Sec. 2.

<sup>3</sup> See, e.g., Peter Pringle and James Spigelman, *The Nuclear Barons* (Holt, Rinehart and Winston 1981) pp. 243-59.

<sup>4</sup> *New York Times*, March 25, 1954, pp. 1, 18.

<sup>5</sup> Jonathan M. Weisgall, *Operation Crossroads: The Atomic Tests at Bikini Atoll* (Naval Institute Press 1994), pp. 304-05.

ple were moved off immediately. It turned out that an AEC scientist made a careless mathematical error, throwing off by a factor of 100 the radioactive dose the returning Bikinians would receive. "We just plain goofed," the scientist told the press.<sup>6</sup>

- Approximately half the Enewetak population cannot return to their home islands in the northern part of the atoll, where radiation still renders the islands too radioactive. The Runit Dome, containing over 110,000 cubic yards of radioactive contaminants, remains on Enewetak Atoll.
- At least four islands at Bikini and five at Enewetak were completely or partially vaporized during the testing program.
- Although they were over 100 miles from Bikini, the people of Rongelap received a radiation dose from Bravo equal to that received by Japanese people less than two miles from ground zero at Hiroshima and Nagasaki. They suffered from radiation poisoning, all but two of the nineteen children who were under ten at the time of Bravo developed abnormal thyroid nodules, and there has been one leukemia death.<sup>7</sup> The people were moved off the islands for three years after the Bravo shot, and they moved off again in 1985 amid concerns about radiation dangers.
- The people of Utrok were returned to their home atoll a mere three months after Bravo and were exposed to high levels of residual fallout in the ensuing years. This unnecessary exposure led to thyroid problems and other cancers.
- The inhabitants of Rongelap and Utrok were the subjects of a medical research program designed to understand the effects of ionizing radiation, and they continue to suffer from radiation-related diseases. Indeed, recent Department of Energy whole body counting data has shown that the people living on Utrok are still exposed to radioactive cesium-137.

### III. 1980s Court Cases and the Compact

In the 1980s, the peoples of the four atolls and other Marshall Islanders brought lawsuits against the United States for property and other damages totaling more than \$5 billion. During the litigation, the U.S. and RMI governments signed the Compact and the subsidiary Section 177 Agreement, which established a \$150 million Nuclear Fund, income from which was earmarked for the peoples of the four atolls "as a means to address past, present, and future consequences of the Nuclear Testing Program."<sup>8</sup> Income was also earmarked to fund a Nuclear Claims Tribunal, which was established with "jurisdiction to render final determination upon all claims past, present and future, of the Government, citizens, and nationals of the Marshall Islands which are based on, arise out of, or are in any way related to the Nuclear Testing Program."<sup>9</sup>

The Section 177 Agreement also provides that it constitutes the full settlement of all claims, "past, present and future," of Marshall Islanders and their government against the United States arising out of the testing program, and another section provides that all such claims pending in U.S. courts are to be dismissed.<sup>10</sup>

Faced with these provisions, Judge Harkins of the U.S. Claims Court dismissed the nuclear cases after the Compact went into effect, but he emphasized that "in none of these cases has Congress abolished plaintiffs' rights. The Compact recognizes the United States obligations to compensate for damages from the nuclear testing program and the Section 177 Agreement establishes an alternative tribunal [the Nuclear Claims Tribunal] to provide such compensation."<sup>11</sup> Judge Harkins recognized the obvious point that Congress cannot close the doors of U.S. courts to a constitutional taking claim unless it provides for an alternative method of compensation.<sup>12</sup> However, the exercise of this power, as noted by the U.S. Supreme

<sup>6</sup>Los Angeles Times, July 23, 1978, p. 3.

<sup>7</sup>Edwin J. Martin and Richard H. Rowland, Castle Series (Defense Nuclear Agency Report No. 6035F 1954), pp. 3, 235; Robert A. Conard et al., A Twenty-Year Review of Medical Findings in a Marshallese Population Accidentally Exposed to Radioactive Fallout (Brookhaven National Laboratory 1974), pp. 59-76, 81-86.

<sup>8</sup>Compact Section 177 Agreement, Article I, Section 2.

<sup>9</sup>Id., Article IV, Section I(a).

<sup>10</sup>Id., Articles X and XII.

<sup>11</sup>Juda v. United States, 13 CL Ct. 667, 688 (1987). He repeated this point later: "Plaintiffs are not deprived of every forum. An alternative tribunal to provide compensation has been provided." Id. at 689.

<sup>12</sup>As the noted constitutional scholar Gerald Gunther wrote, "[A]ll agree that Congress cannot bar all remedies for enforcing federal constitutional rights." Gunther, "Congressional Power to Curtail Federal Court Jurisdiction: An Opinionated Guide to the Ongoing Debate," 36 Stan.L.Rev. 895, 921 n. 113 (1984).

Court, is subject to the overriding requirement that "there must be at the time of taking 'reasonable, certain and adequate provision for obtaining compensation.'"<sup>13</sup>

A situation nearly identical to this one arose in *Dames & Moore v. Regan*, in which the United States dismissed pending claims against Iran under the agreement for the release of the U.S. hostages. The plaintiff, which owned one of these claims, argued that the alternative forum provided by that agreement, the U.S.-Iran Claims Tribunal, would not provide "reasonable, certain and adequate provision for obtaining compensation," because its claim might not be paid in full. The Supreme Court found that the Tribunal was an adequate alternative forum and therefore upheld the agreement, noting, however, that the Claims Court remained open "to the extent petitioner believes it has suffered an unconstitutional taking by the suspension of the claims."<sup>14</sup>

Applying this same standard, Judge Harkins found that the "settlement procedure, as effectuated through the Section 177 Agreement, provides a "reasonable" and "certain" means for obtaining compensation." However, he was not so sure about whether the procedure would provide adequate funding: "Whether the compensation in the alternative procedures...is adequate is dependent upon the amount and type of compensation that ultimately is provided through these procedures." In essence, he imposed an "exhaustion of remedies" test for the claimants: Because the Nuclear Claims Tribunal was not yet in existence, he held that "[w]hether the settlement provides "adequate" compensation cannot be determined at this time....This alternative procedure for compensation cannot be challenged judicially until it has run its course."<sup>15</sup>

On appeal, the U.S. Court of Appeals for the Federal Circuit reached a similar conclusion: "Congress intended the alternative procedure [the Nuclear Claims Tribunal] to be utilized, and we are unpersuaded that judicial intervention is appropriate at this time on the mere speculation that the alternative remedy may prove to be inadequate."<sup>16</sup>

Seventeen years have passed since that court's decision, and history has shown that the peoples of the four atolls were right: The Nuclear Claims Tribunal has "run its course," to use Judge Harkins' phrase, and it cannot pay these claims. After lengthy trials, it awarded \$386 million to the people of Enewetak for loss of use, restoration, and hardship, and \$563 million to the people of Bikini, but it has paid out less than one-half of one percent of these awards. Unlike the *Dames & Moore* case, where the alternative system of relief—the U.S.-Iran Claims Tribunal—was appropriate because it was "capable of providing meaningful relief,"<sup>17</sup> the remedy here was simply not adequate.<sup>18</sup>

#### **IV. Bona Fides of the Nuclear Claims Tribunal and Size of its Awards**

Before discussing a possible Congressional solution to this dilemma, it may be useful to address head-on two contentious questions: First, was the Nuclear Claims Tribunal process valid or did the "home field" advantage result in skewed and inflated awards? Second, how should Congress deal with what some describe as the "sticker shock" of these awards?

As to the first question, we direct your attention to a May 20, 2005 letter to Chairman Pombo from former U.S. Attorney General Dick Thornburgh, who conducted an independent investigation of the Nuclear Claims Tribunal. "Simply stated," Attorney General Thornburgh writes, "the report finds that the [Nuclear Claims Tribunal] fulfilled the basic functions for which it was created in a reasonable, fair and orderly manner, and with adequate independence, based on procedures, closely resembling legal systems in the United States, that are entitled to respect."

The Thornburgh report also concluded that property damage claims before the Tribunal have been asserted through class action vehicles similar to those used in the United States, with litigation "characterized by the kind of legal briefing, expert reports, and motion practice that would be found in many U.S. court proceedings,"

<sup>13</sup> *Blanchette v. Connecticut General Insurance Corp.*, 419 U.S. 102, 124-25 (1974), quoting *Cherokee Nation v. Southern Kansas Railroad Co.*, 135 U.S. 641, 659 (1890).

<sup>14</sup> 453 U.S. 654, 689 (1981).

<sup>15</sup> *Juda v. United States*, *supra*, 13 Cl.Ct. at 689.

<sup>16</sup> *People of Enewetak, Rongelap and other Marshall Islands Atolls v. United States*, 864 F.2d 134, 136 (Ct. App. Fed. Cir. 1988).

<sup>17</sup> *Dames & Moore*, 453 U.S. at 687.

<sup>18</sup> See also Justice Powell, concurring, *id.* at 691: "The Court holds that parties whose valid claims are not adjudicated or not fully paid may bring a "taking" claim against the United States in the Court of Claims, the jurisdiction of which this Court acknowledges. The Government must pay just compensation when it furthers the Nation's foreign policy goals by using as "bargaining chips" claims lawfully held by a relatively few persons and subject to the jurisdiction of our courts."

and hearing procedures and rules of evidence that resemble those used in administrative proceedings in the United States.<sup>19</sup>

As to the second issue—the amount of the Tribunal's awards—we wish to bring the following points to the attention of this Committee:

- The people of Bikini presented cleanup options that ranged as high as \$1 billion. The option selected by the Tribunal, with a cost of just over \$250 million, is the same cleanup method recommended by the U.S. Department of Energy's contractor, Lawrence Livermore National Laboratory.
- These cleanup costs must be considered in the context of the cost of the tests themselves. Defense Department costs for all nuclear tests in the Marshall Islands exceeded \$5.2 billion.<sup>20</sup> Civilian costs are harder to calculate, but in transferring its materials, facilities and properties to the new AEC in 1946, the Manhattan Project spent \$3.8 billion to manufacture nine new atomic bombs and continue research.<sup>21</sup> The AEC spent over \$4.3 billion from July 1, 1946 through June 30, 1947,<sup>22</sup> and from 1948-1958, the AEC spent nearly \$130 billion on production research, development, and testing of nuclear weapons.<sup>23</sup>
- The United States never questioned the cost or value of the nuclear tests at Bikini and Enewetak, because they assured U.S. nuclear superiority over the Soviet Union and led to immediate savings of billions of dollars in the Defense Department budget in the late 1940s and 1950s. As the AEC told Congress in 1953: "Each of the tests involved a major expenditure of money, manpower, scientific effort and time. Nevertheless, in accelerating the rate of weapons development, they saved far more than their cost."<sup>24</sup>
- Although the Compact Section 177 Agreement states that it constitutes the full settlement of all claims arising out of the nuclear testing program, other sections of the Compact make clear that Congress intended to leave the door open for other funding programs for the four atolls. For example:
  - Section 103(h)(2) of the Compact of Free Association Act (Pub. L. 99-239) established the Enewetak Food and Agriculture Program, which Congress has funded for 19 years at an annual amount of between \$1.1 and \$1.8 million because it recognized the challenge of providing food to the Enewetak people.
  - Section 103 (i) authorized funding for the radiological cleanup of Rongelap Island, and Congress subsequently appropriated \$45 million for a Rongelap resettlement trust fund.
  - Article VI of the Section 177 Agreement "reaffirms" the U.S. "commitment to provide funds for the resettlement of Bikini Atoll," and Section 103 (l) of the Compact declares that "it is the policy of the United States...that because the United States...rendered Bikini Atoll unsafe for habitation,...the United States will fulfill its responsibility for restoring Bikini Atoll to habitability...." Congress subsequently appropriated \$90 million for the radiological cleanup of Bikini Atoll. See Pub. L. No. 100-446.
- The Department of Energy's budget for the cleanup of radioactive, chemical and other hazardous waste at 53 U.S. nuclear weapons production and development sites in 23 states dwarfs the numbers under consideration here. That cleanup program has been estimated to cost between \$168- \$212 billion.<sup>25</sup> Congress appropriated an average of \$5.75 billion annually for the program in the late 1990s, and it is anticipated that this funding level will continue at this rate indefinitely.<sup>26</sup>

<sup>19</sup> Dick Thornburgh et al., "The Nuclear Claims Tribunal of the Republic of the Marshall Islands: An Independent Examination and Assessment of its Decision-Making Process" (Kirkpatrick & Lockhart, LLP 2003), p. 2.

<sup>20</sup> Stephen I. Schwartz, ed., *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons Since 1940* (Brookings Institution Press 1998), pp. 101-03. The dollar figures in this book, expressed in 1996 dollars, have been updated through 2004 using a cumulative Consumer Price Index increase of 21.9% from 1996-2004. See <http://www.bls.gov/cpi/home.htm#tables>.

<sup>21</sup> Id. at 61-62.

<sup>22</sup> Id. at 63.

<sup>23</sup> Id. at 65-75.

<sup>24</sup> U.S. Atomic Energy Commission, Thirteenth Semiannual Report of the Atomic Energy Commission (1953), p. 18.

<sup>25</sup> Status Report on Path to Closure (U.S. Department of Energy, Office of Environmental Management) (March 2000) at 11 (<http://web.em.doe.gov/closure/fy2000/index.htmlv>); Closure Planning Guidance (U.S. Department of Energy, Office of Environmental Management) (June 1, 2004) at 14 <http://www.em.doe.gov/vgn/images/portal/cit-1819/26/34/94385Vol1-Final-Printed-Version-Word4.pdf>.

<sup>26</sup> Accelerating Cleanup: Paths to Closure (U.S. Department of Energy, Office of Environmental Management) (June 1998) at 2, 5-8. See also Environmental Management: Program Budget Totals (FY 1998-FY 2000) and Environmental Management's FY 2000 Congressional Budget Request.

- The U.S. Government spent more than \$10 billion at the Hanford, Washington nuclear weapons site without removing one teaspoonful of contaminated soil.<sup>27</sup> That is what DOE has spent on studying radiation problems at an area exposed to a minuscule percentage of the radiation that was unleashed in the Marshall Islands.
- The U.S. Government has already approved compensation claims of more than \$917 million to claimants who were on-site at Nevada nuclear tests, those downwind from the testing, and those working in radioactive mines.<sup>28</sup> The nuclear tests in Nevada were nearly 100 times smaller in magnitude than the tests conducted in the Marshall Islands.<sup>29</sup>

#### V. Proposed Legislative Solution

As suggested by the March 14, 2005 Congressional Research Service report on the changed circumstances petition listing Congress' policy options, the RMI government and the four atolls urge you to adopt the legislation to "[a]llow the federal courts...to review the judgments of the Nuclear Claims Tribunal and potentially to order the United States to pay these awards, in whole or in part."<sup>30</sup> The legislation would read as follows:

Section 103(g) of United States Public Law 99-239 (99 Stat. 1775) is amended by adding a new paragraph (3) as follows:

"Judgments of the Nuclear Claims Tribunal established pursuant to Article IV of the Section 177 Agreement with respect to claims for loss or damage to property or person that have not been fully paid or otherwise satisfied may be presented for review and certification to the United States Court of Appeals for the Federal Circuit, or its successor court, which shall have jurisdiction therefor, notwithstanding the provisions of Article X, XI, and XII of the Section 177 Agreement or 28 U.S.C. 1502, for the limited purposes set forth in this paragraph only, and which court's decisions shall be reviewable as provided by the laws of the United States. The United States Court of Appeals for the Federal Circuit shall review such judgments, certify them and order payment thereof pursuant to 28 U.S.C. 1304, unless such court finds, after a hearing, that any such judgment is manifestly erroneous as to law or fact, or manifestly excessive. In either of such cases, the United States Court of Appeals for the Federal Circuit shall have jurisdiction to modify such judgment. In ordering payment, the Court shall take into account any prior compensation made by the Nuclear Claims Tribunal as a result of such judgment. In any such certification proceeding the Government of the United States shall stand in the place of the Defender of the Fund and shall be a party to and may oppose certification or payment of judgments of the Nuclear Claims Tribunal."

This legislation would:

- Put the major component of the "changed circumstances" petition—property claims—back where they started, in the courts, which, on a daily basis, deal with factual and legal issues concerning damage claims.
- Resolve the outstanding legal flaw in the Compact 177 scheme set forth at pp. 3-5, above, that has resulted from the inability of the Tribunal to pay awards.
- Restore to the federal courts the same jurisdiction they have over other claims from the Trusteeship era. The proposal closely tracks the language of Section 174 (c) of the Compact, under which the United States waives sovereign immunity for all claims arising from its previous actions as Administering Authority of the Trust Territory, other than those claims settled by the Section 177 Agreement.
- Relieve Congress of its traditional role of dealing with these nuclear legacy issues. The Section 177 Agreement imposed a political settlement on a legal matter. Congress is ill-equipped to resolve these issues, given the need for a detailed review of scientific, medical and legal questions, but courts deal with them all the time.
- Would provide a source of funding for the nuclear legacy issues other than the appropriations process, because any award upheld by the U.S. Court of Appeals

<sup>27</sup> Environmental Management: Progress & Plans of the Environmental Management Program (November 1996) (DOE/EM-0317) at 120; Closure Planning Guidance, *supra* n. 25, at 35, 65-66.

<sup>28</sup> See <http://www.usdoj.gov/civil/omp/omi/Tre—SysClaimsToDateSum.pdf>.

<sup>29</sup> Thornburgh Report, *supra* n. 17 at 3

<sup>30</sup> Thomas Lum, et al., "Republic of the Marshall Islands Changed Circumstances Petition to Congress," Congressional Research Service Report RL32811 (March 14, 2005) at 6 (hereinafter "CRS report").

for the Federal Circuit would be paid from the Claims Court Judgment Fund established for awards against the United States under 28 U.S.C. § 1304.

- Would protect the role of the executive branch by ensuring that the Justice Department can appear to oppose payment or offer modifications to any proposed award. In addition, any new awards would be discounted by amounts already paid under the Compact.
- Would be consistent with other Compact provisions (see p. 7, above) that show the Section 177 Agreement was not intended to provide total compensation to the peoples of the four atolls.

There are three venues the four atoll groups can pursue to seek redress for this issue. The executive branch refused to negotiate the matter during the recent Compact negotiations<sup>31</sup> and ignored the issue in its long-overdue response to the changed circumstances petition in January 2005.<sup>32</sup> We are now before the legislative branch, but in what may be the only House hearing to examine the legacy of the Compact and the issues raised by the changed circumstances petition, this committee hasn't even seen fit to invite representatives of the four atolls to testify, so we are forced to submit this testimony as an addendum to the Republic of the Marshall Islands' testimony and hope that it receives some attention.

The third option is to go to the judicial branch without any enabling legislation. Whether—and when—that occurs depends in part on the reaction of this committee to our legislative proposal but also on the various timetables the four atolls face in bringing legal actions. For example, the Nuclear Claims Tribunal issued its award to Enewetak in April 2000. Viewing that judgment as a property claim and facing a six-year statute of limitations in the U.S. Claims Court for bringing such claims against the United States, Enewetak's counsel must file a case within eleven months at least to protect his clients' interests. Bikini's six-year period will expire in March 2007, while the other two atolls have yet to receive Tribunal awards but expect to be in the same legal posture as Bikini and Enewetak once their awards are granted.

In one sense, payment of the Tribunal's awards can be seen as part of the changed circumstances petition, because no one assumed at the start of the Compact that the United States would fail to discharge its responsibility. On the other hand, this dilemma stands on its own outside the petition, because it represents an attempt by the United States to wash its hands of legal obligations to people it damaged and other people who, with no real options, gave up their lands to help the United States win the Cold War.

#### VI. Congressional Research Service Report

Although we disagree with some of the Congressional Research Service (CRS) report's conclusions, we welcome the report as a significant contribution to the record before this committee. In fact, it represents the most conscientious effort of any federal entity to define the legal and policy issues under the Section 177 Agreement that Congress must address. That said, the merits of the Nuclear Claims Tribunal's awards—and the inability of the Tribunal to pay them—cannot be dismissed in staff reports for Congress. They are real and must be dealt with.

This testimony is not the appropriate means to respond to the detailed analysis and discussion in the CRS study, but the peoples of the four atolls are concerned with several key points. We have concerns about the report's conclusions regarding radiation dose estimates in the Marshall Islands as well as the appropriateness of U.S. standards for the cleanup of radioactive contaminants in the Marshalls to protect human health and the environment. Those issues, however, are well covered by Dr. John Mauro in the testimony he is presenting to you today, so this testimony will cover just a few of the key issues concerning the report's comments on the loss of use methodology adopted by the Tribunal in its property claim awards.

We also have concerns about the report's conclusions concerning the appraisals of Enewetak and Bikini. In general, the CRS report praises the Tribunal's methodology and the appraisal reports it relies on. On not one, but three separate occasions, the

<sup>31</sup> See "Opening Statement of Hon. Gerald M. Zackios, Minister for Foreign Affairs and Chief Compact Negotiator, 4th Round of RMI-U.S. Compact Negotiations, Honolulu, Hawaii, August 28-29, 2002 at 8-9; See also March 27, 2003 letter from Albert V. Short, U.S. Compact Negotiator, to Republic of the Marshall Islands Minister of Foreign Affairs Gerald Zackios: "We cannot...address requests for any additional assistance related to the Nuclear Testing Program since this issue is on a separate track. It is now before Congress via the RMI's request submitted under the changed circumstances provision of the Agreement between the U.S. and the RMI for the implementation of section 177 of the Compact.... [A]n interagency group will study the request and respond to Congress separately from the Compact negotiations."

<sup>32</sup> See U.S. Department of State, "Report Evaluating the Request of the Government of the Republic of the Marshall Islands Presented to the Congress of the United States of America," November 2004.

CRS report states that “the methodology used by the Nuclear Claims Tribunal to estimate the value of the lost use of the claimants’ property is considered to be reasonable and appropriate.”<sup>33</sup> It also embraces the methodology of the appraisal report relied on by the Tribunal as “rooted in sound economic and financial theory, and the methodology itself is standard methodology used by economist, as well as the courts, in solving similar problems.”<sup>34</sup>

Nevertheless, the CRS report raises a number of questions about the appraisals of Bikini and Enewetak. The appraisers employed by those atolls have responded to these criticisms and questions with a six-page letter, which we look forward to sharing with the CRS staff, especially as the report states on page 2 that this report will be updated. A few of the issues are covered below:

- The report criticizes the appraisals for using “lease transactions from distance atolls which may not reflect the rents on Enewetak and Bikini.”<sup>35</sup> In fact, there were no leases from these two atolls, so the appraisers prepared the most comprehensive database of real estate transactions ever compiled in the Marshall Islands, and later refined these 500-plus transactions to 196 after eliminating non-arms-length deals, non-cash considerations, duplicates, and records without adequate documentation. This database is: nondiscriminatory; representative of overall market activity in the Marshalls; accepted by numerous other appraisal organizations; and the best information available.
- The report criticizes the resulting data as reflecting “rents set by government decree rather than as the equilibrium of supply and demand for the use of land in a competitive real estate market.”<sup>36</sup> However, this rate has been the dominant factor in the marketplace, as more than half the transactions studied involve leases between private parties who by mutual agreement adopted the then-existing government rate, and many leases actually indexed the government rate for future escalations and renewals.
- The report questions the use of comparables in commercial centers as opposed to more remote locations in the Marshall Islands. In fact, the appraisers considered—and rejected—good faith payments made to Kwajalein Atoll landowners for use of Kwajalein as a U.S. military based, which would have increased the average rental in the appraisers’ database by about 32 percent.
- The report argues that vaporized lands should be treated as permanent takings, and their values calculated that way, but fee simple doesn’t exist in the Marshalls; no one can sell their birthright ownership in land. These cases involved loss of use, not loss of ownership.

Again, we appreciate your willingness to consider our views, and we and our legal representatives are available at any time to work with you and your staff.

Thank you, and we welcome any follow-up questions from staff.



<sup>33</sup> CRS report at 4, 18, and 21.

<sup>34</sup> Id. at 22.

<sup>35</sup> Id.

<sup>36</sup> Id.